MINNESOTA STATE BOARD OF INVESTMENT

MINNESOTA STATE BOARD
OF INVESTMENT
MEETING
May 30, 2019

Governor Tim Walz

State Auditor Julie Blaha

Secretary of State Steve Simon

Attorney General Keith Ellison

This page intentionally left blank.

STATE BOARD OF INVESTMENT

AGENDA AND MINUTES

May 30, 2019

This page intentionally left blank.

AGENDA
STATE BOARD OF INVESTMENT MEETING
Thursday, May 30, 2019
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, 2019	
2. Report from the Executive Director	
A. Quarterly Performance Summary (January 1, 2019 – March 31, 2019)	**A**
B. Administrative Report 1. Reports on Budget and Travel 2. Legislative Update 3. Participant Directed Investment Program (PDIP) Update 4. Sudan Update 5. Iran Update 6. Litigation Update	**B**
3. Report from the SBI Administrative Committee A. Review of Executive Director's Proposed Work Plan FY20 B. Review of Budget Plan for FY20 and FY21 C. Review of Continuing Fiduciary Education Plan D. Review of Executive Director's Evaluation E. Update of Business Continuity Plan	**C**
INVESTMENT ADVISORY COUNCIL REPORT	
4. Private Markets Program	**D**
5. Public Markets, Non-Retirement, and Participant Directed Investment Programs	**E**
REPORTS	
6. AON Market Environment Report	**F**
7. Meketa Investment Market Risk Metrics	**G**
8. Comprehensive Performance Report	**H**
9. Other Items	

This page intentionally left blank.

Minutes
State Board of Investment
March 1, 2019

The State Board of Investment (SBI) met at 2:26 P.M. Friday, March 1, 2019 in G23 Senate Committee Room of the State Capitol, St. Paul, Minnesota. Governor Tim Walz, State Auditor Julie Blaha, Secretary of State Steve Simon, and Attorney General Keith Ellison were present. The minutes of the December 11, 2018 meeting were approved.

Executive Director's Report
Mr. Perry referred members to Tab A of the meeting materials and stated that, as of December 31, 2018, the SBI was responsible for managing $90 billion of assets. Mr. Perry reported that the Combined Funds had outperformed its Composite Index over the ten-year period ending December 31, 2018 (Combined Funds 9.9% vs. Combined Funds-Composite Index 9.4%) and had provided a real rate of return of 4.1% above inflation over the latest 20 year period (Combined Funds 6.3% vs. CPI 2.2%).

Mr. Perry stated that assets decreased over the quarter (Combined Funds ending value of $64.1 versus a beginning value of $70.0 billion), due primarily to negative investment returns. The Combined Funds underperformed the benchmark for the quarter (Combined Funds -7.7% vs. Combined Funds-Composite Index -7.3%) and slightly outperformed for the year (Combined Funds -2.9% vs. Combined Funds-Composite Index -3.0%). The Combined Funds narrowly underperformed the benchmark return over the three and five-year periods and outperformed in all other time periods reported.

Mr. Perry reported that the asset mix is close to target. He then reported that the combined public equity portfolio underperformed the benchmark during the quarter (Public Equity -13.9% vs. Public Equity Benchmark -13.3%) and the year (Public Equity -8.4% vs. Public Equity Benchmark -8.2%). Breaking it down between domestic and international equities, the domestic equity manager group underperformed its benchmark for the quarter (Domestic Equity -14.8% vs. Domestic Equity Benchmark -14.3%) and the year (Domestic Equity -5.3% vs. Domestic Equity Benchmark -5.2%), and has underperformed the benchmark performance over all other time periods except the ten-year period when it matched the benchmark performance. The international equity manager group underperformed its target for the quarter (International Equity -11.8% vs. International Equity Benchmark -11.5%) and for the year (International Equity -14.5% vs. International Equity Benchmark -14.2%) and has outperformed over all remaining time periods except the three-year period when it underperformed. Mr. Perry indicated that the fixed income segment underperformed its benchmark for the quarter (Fixed Income 1.1% vs. Fixed Income Benchmark 1.6%) and the year (Fixed Income -0.0% vs. Fixed Income Benchmark 0.0%) and outperformed over all other time periods reported. He reported that the Treasury portfolio, underperformed its target for the quarter (Treasuries 3.6% vs. Treasuries Benchmark 3.7%). He stated that the private market investments contributed to performance for the quarter and the year (Total Private Markets return of 3.7% and 15.7%, respectively) and also over the longer time periods. Mr. Perry continued by drawing member's attention to the Strategic Allocation Category Framework and noted that the fund has added value relative to the volatility equivalent benchmark.

He concluded his report by stating that the fund had fourth quartile performance, in the TUCS universe, for the quarter and achieved either median or above performance in each of the other time periods listed.

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 fiscal year to date, which was favorable, and staff travel for the quarter. He indicated that Tab B also included the Legislative Auditor's letter for the SBI's financial operations which was a clean report. Mr. Perry stated that members should have received a copy of the SBI's Annual Report, a copy of which was also posted on the SBI's website. Lastly, he stated that there was no legislative activity, other than the SBI's Salary Compensation Report which is being reviewed by the Legislative Coordinating Committee (LCC), and the possibility that the Pension Commission may request a divestment study.

Mr. Perry stated that one of the SBI's consultant's, Pension Consulting Alliance (PCA), is conducting a Climate Risk Investment Study which he expects to be finalized in the third or fourth quarter. Information with respect to updates on current portfolio restrictions for Iran and Sudan was included in the Executive Director's Administrative Report.

Mr. Perry referred members to Tab C of the meeting materials to the proposal for the Minnesota College Savings Plan (529 Plan) contract. The SBI is responsible for assisting the Office of Higher Education (OHE) in selecting a vendor(s) to provide administrative, marketing and investment services for the 529 Plan and for ongoing monitoring of the investments. The contract with the current vendor, TIAA-CREF Tuition Financing, Inc. (TFI), an affiliate of TIAA, expires August 31, 2019. Mr. Perry stated that an RFP was sent out, one response was received, and that the recommendation is to renew the contract with TFI. He responded to questions from Board members. Secretary of State Simon moved approval of the recommendation which reads: **The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from legal counsel, to work with the Office of Higher Education to negotiate and execute a new five year contract with TIAA-CREF Tuition Financing, Inc. to provide services for the Minnesota College Savings Plan.** The motion passed unanimously.

Mr. Perry referred members to Tab D, a report from the Proxy Committee. He first asked Members to reauthorize the Proxy Committee, which is done every two years and was last done in February 2017. State Auditor Blaha moved approval of the recommendation which reads: **The Executive Director recommends that the SBI adopt the resolution which reauthorizes the Proxy Committee and delegates proxy voting responsibilities according to established guidelines.** The motion passed unanimously. The resolution is included as **Attachment A**.

Mr. Perry then asked members to approve the SBI's Proxy Voting Guidelines. State Auditor Blaha moved approval of the recommendation which reads: **The Proxy Committee and the Executive Director recommend that the SBI reaffirm the Proxy Voting Guidelines.** The motion passed unanimously.

Mr. Perry referred members to Tab E of the meeting materials, a report from the IAC Membership Review Committee. He indicated that the terms of five IAC members, four incumbent and one vacant position, were up for renewal. The four incumbent members included Kerry Brick of Cargill Incorporated, Dennis Duerst of 3M, Gary Martin of Macalester College, and Malcolm McDonald, retired Corporate Secretary of Space Center. Mr. Brick, Mr. Duerst, and Mr. Martin reapplied and six new applications were received for membership. Mr. Perry stated that the Committee reviewed all of the candidates and recommend that the three incumbent members be reappointed and that two of the new candidates, Mr. Daniel McConnell from Building and Construction Trades Council of Minneapolis and Ms. Nancy Orr from Fiduciary Counselling, Inc. be appointed to the IAC for terms that would be coterminous with that of the Governor. Mr. Perry added that in recognition of Mr. McDonald's long-term service as a member of the IAC, since its inception in 1981, and his continued participation despite health issues, Mr. Perry had asked Mr. McDonald to continue to attend IAC and Board meetings as a non-voting member. Attorney General Ellison moved approval of the recommendations which reads: **The Committee recommends that the Board reappoint the following as members of the Investment Advisory Council, with terms expiring in January 2023: Mr. Kerry Brick; Mr. Dennis Duerst; Mr. Gary Martin.**

The Committee recommends that the Board appoint the following as members to the Investment Advisory Council, with terms expiring in January 2023: Mr. Daniel John McConnell; Ms. Nancy C. Orr. The Executive Director recommends that the Board appoint Mr. Malcolm McDonald as an emeritus member of the Investment Advisory Council. The motions passed unanimously.

Mr. Martin, Chairperson of the Investment Advisory Council (IAC), referred members to Tab F and reviewed the seven private markets proposals, the first six of which are with existing managers, and one with a new manager: Rockpoint Group Fund VI (Real Estate), Blackstone Group Capital Partners VIII (Private Equity), Advent International GPE IX (Private Equity), Summit Partners Growth Equity X (Private Equity), Oak Hill Capital Fund V (Private Equity), Värde Partners Fund XIII (Distress/Opp.), and Arsenal Capital Partners Fund V (Private Equity). State Auditor Blaha moved approval of the seven recommendations in Tab F which reads: **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 Rockpoint Real Estate Fund VI, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Rockpoint Group upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Rockpoint Group 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 Blackstone Capital Partners VIII, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 The Blackstone Group upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on The Blackstone Group 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 Advent International GPE IX, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Advent International 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 Advent International 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 Summit Partners GE X, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Summit 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 Summit 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 $100 million, or 20% of Oak Hill Capital Partners V, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Oak Hill 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 Oak Hill 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 Värde Fund XIII, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Värde 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 Värde 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 $100 million, or 20% of Arsenal Capital Partners V, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Arsenal 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 Arsenal or reduction or termination of the commitment. The motion passed unanimously.

Mr. Perry indicated that the remaining items on the meeting agenda Tab G, the Public Markets, Non-Retirement and Participant Directed Investment Programs report; Tab H, a Market Environment summary prepared by AON; Tab I, an Investment Market Risk Metrics report prepared by PCA; and Tab J, the Comprehensive Performance Report, were information items.

The meeting adjourned at 2:58 p.m.

Respectfully submitted,

Mansco Perry III

Mansco Perry III
Executive Director and
Chief Investment Officer

This page intentionally left blank.

ATTACHMENT A

**RESOLUTION OF THE
MINNESOTA BOARD OF INVESTMENT
CONCERNING PROXY VOTING**

WHEREAS, as a stockholder, the Minnesota State Board of Investment (SBI) is entitled to sponsor and cosponsor shareholder resolutions and participate in corporate annual meetings by casting its votes by proxy or through direct attendance at the meetings; and

WHEREAS, the SBI has previously established a Proxy Committee:

NOW THEREFORE, BE IT RESOLVED THAT:

1. To advise and assist the SBI in the implementation of proxy voting guidelines previously adopted by the Board the SBI hereby authorizes and reaffirms the establishment of the SBI Proxy Committee composed of a representative selected by each member of the SBI to be chaired by the designee of the Governor and convened as necessary in accord with the Guidelines.

2. The SBI further authorizes the SBI Proxy Committee to review the Guidelines periodically and report to the SBI as necessary.

3. The SBI further directs its staff to advise and assist the Proxy Committee in the implementation of this resolution and directs its Executive Director to obtain such consulting and reporting services as may be necessary.

4. This resolution shall take effect immediately.

Adopted this 1st day
of March, 2019

Governor Tim Walz
Chair, Minnesota
State Board of Investment

This page intentionally left blank.

TAB A

Report from the Executive Director

Quarterly Performance Summary

This page intentionally left blank.

Performance Summary

March 31, 2019

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

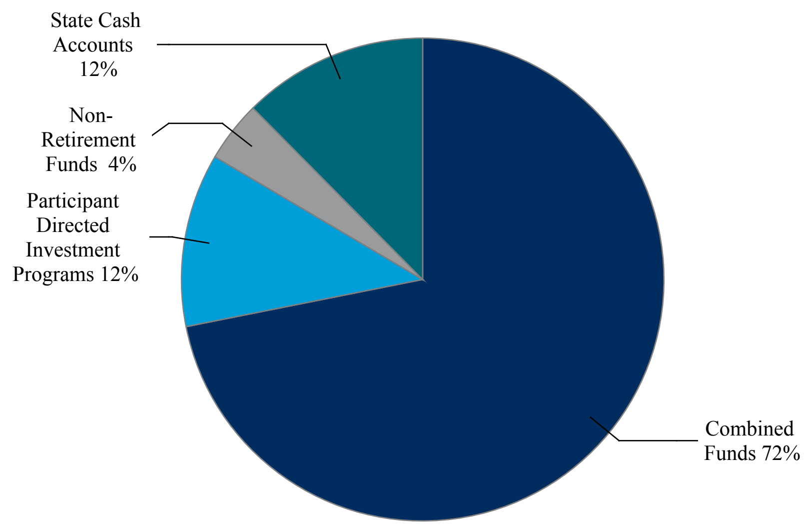
The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

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

	$ Millions
COMBINED FUNDS	
Combined Funds	$68,816
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	3,856
State Deferred Compensation Plan**	5,818
Minnesota College Savings Plan	1,448
Achieve a Better Life Experience	5
NON-RETIREMENT FUNDS	
Assigned Risk Account	282
Permanent School Fund	1,463
Environmental Trust Fund	1,172
Closed Landfill Investment Fund	93
Miscellaneous	248
Other Post Employement Benefits	653
STATE CASH ACCOUNTS	
Treasurer's Cash	11,591
Other State Cash Accounts	306
TOTAL	
SBI AUM	95,752



* 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

Combined Funds Long Term Objectives

Comparison to Objective

Match or Exceed Composite Index (10 yr.)

Outperform a composite market index weighted in a manner that reflects the long-term asset allocation of the Combined Funds over the latest 10 year period.

	10 Year
COMBINED FUNDS	11.6%
COMBINED FUNDS - COMPOSITE INDEX	11.2
Excess	0.5

Provide Real Return (20 yr.)

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

	20 Year
COMBINED FUNDS	6.6%
CPI-U	2.2
Excess	4.4

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.

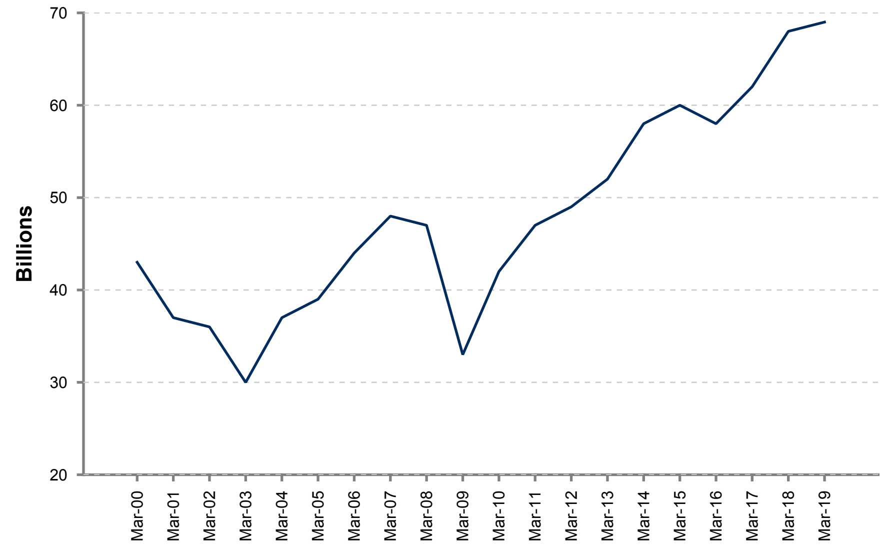
Combined Funds Summary

Combined Funds Change in Market Value ($Millions)

	One Quarter
COMBINED FUNDS	
Beginning Market Value	$64,107
Net Contributions	-667
Investment Return	5,376
Ending Market Value	68,816

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

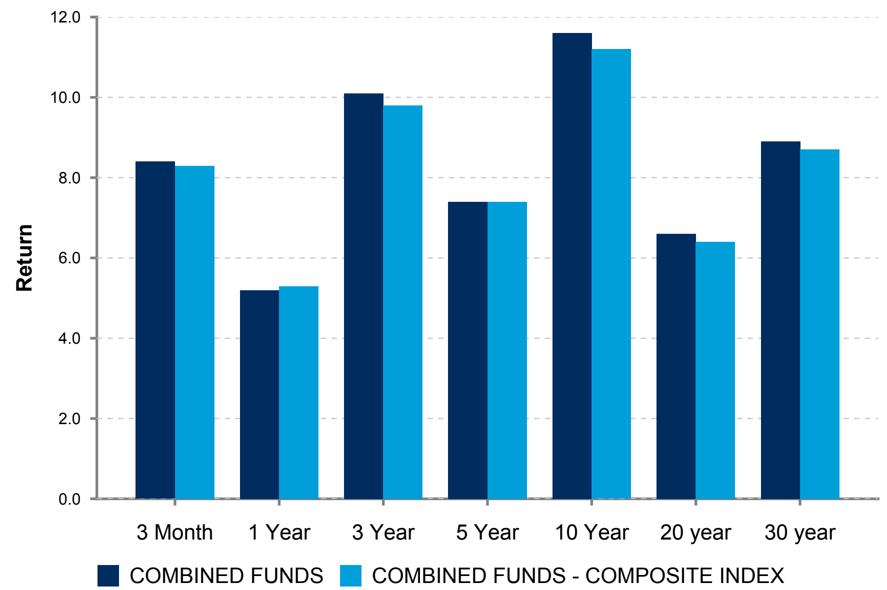
Asset Growth



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.

	Qtr	FYTD	1 Yr	3 Yr	5 Yr	10 Yr	20 Yr	30 Yr
COMBINED FUNDS	8.4%	3.6%	5.2%	10.1%	7.4%	11.6%	6.6%	8.9%
COMBINED FUNDS - COMPOSITE INDEX	8.3	3.8	5.3	9.8	7.4	11.2	6.4	8.7
Excess	0.2	-0.2	-0.1	0.3	0.0	0.5	0.2	0.3

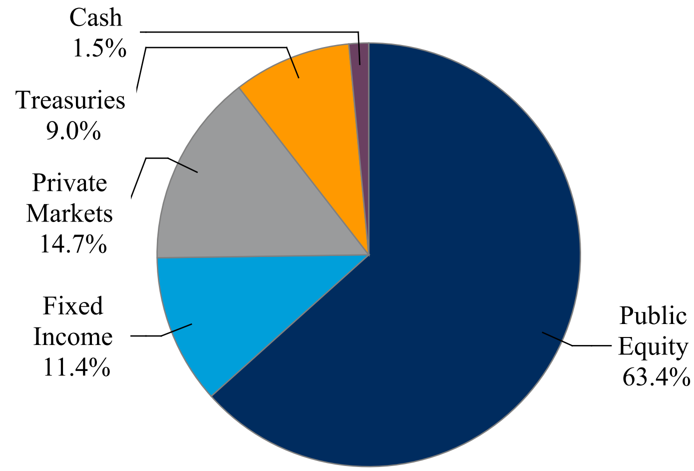


Combined Funds Summary

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.

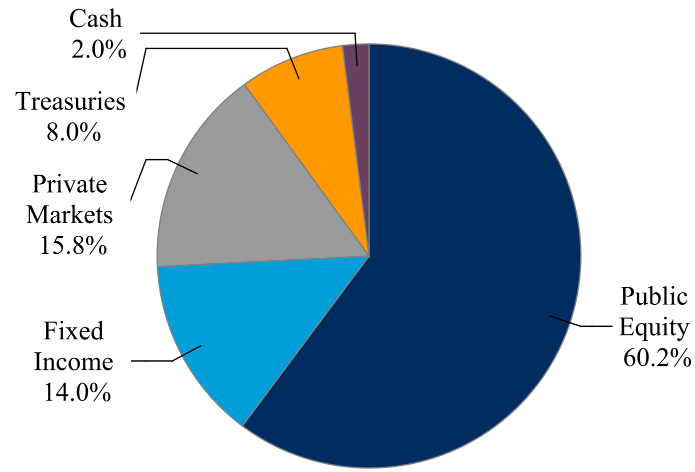
	(Millions)	Actual Mix	Policy Target
Public Equity	$43,594	63.3%	53.0%
Fixed Income	7,870	11.4	12.0
Private Markets	10,088	14.7	25.0
Treasuries	6,203	9.0	8.0
Cash	1,060	1.5	2.0
TOTAL	68,816	100.0	



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.

	Policy Weight	Market Index
Public Equity	60.2%	Public Equity Benchmark
Fixed Income	14.0	BB Barclays U.S. Aggregate
Private Markets	15.8	Private Markets
Treasuries	8.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills



Combined Funds Asset Class Performance Summary

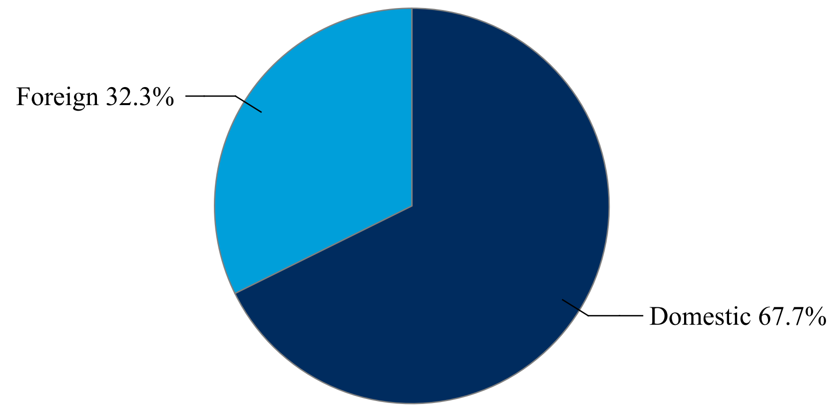
Public Equity

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

The Public Equity benchmark is 60.3% Russell 1000, 6.7% Russell 2000, 24.75% MSCI World ex US (net), and 8.25% MSCI EM (net).

The Russell 1000 and Russell 2000 measure the performance of the 1000 largest and 2000 next largest U.S. companies based on total market capitalization.

The MSCI World ex US index is composed of large and mid cap companies that capture apporximately 85% of the total market capitalization in 22 of the 23 developed markets. The MSCI Emerging Markets index is composed of large and mid cap companies that capture apporximately 85% of the total market capitalization across 24 Emergin Markets countries.



	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Public Equity	13.1%	2.2%	4.2%	11.9%	8.1%	14.3%	5.9%	9.3%
Public Equity Benchmark	12.8	2.7	4.4					
Excess	0.2	-0.5	-0.2					
Domestic Equity	14.2	4.2	8.5	13.6	10.1	16.0	6.2	9.8
Domestic Equity Benchmark	14.1	4.7	8.8	13.5	10.4	16.0	6.3	9.9
Excess	0.2	-0.5	-0.3	0.1	-0.3	0.0	-0.1	-0.2
International Equity	10.5	-2.1	-4.4	7.9	2.9	9.3	4.9	
International Equity Benchmark	10.3	-1.6	-4.2	8.1	2.6	8.9	4.5	
Excess	0.2	-0.4	-0.2	-0.2	0.3	0.4	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 program includes Core Fixed Income and Treasuries. The Combined Funds performance for these asset classes is shown here.

The Core 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.

The Treasuries benchmark is the Bloomberg Barclays Treasury 5+ Years Index.

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Fixed Income	3.4%	4.9%	4.9%	2.7%	3.2%	5.2%	5.1%	6.5%
Fixed Income Benchmark	2.9	4.6	4.5	2.0	2.7	3.8	4.7	6.2
Excess	0.5	0.2	0.4	0.7	0.4	1.4	0.4	0.3
Treasuries	3.4	5.5	5.5					
BBG BARC 5Y + Us Tsy Idx	3.3	5.6	5.7					
Excess	0.0	-0.1	-0.2					

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.

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Cash	0.6%	1.7%	2.2%	1.3%	0.9%	0.7%	2.3%	3.8%
90 DAY T-BILL	0.6	1.7	2.1	1.2	0.7	0.4	1.9	3.1

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

STATE STREET.

Combined Funds Asset Class Performance Summary

Private Markets

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	25 year	30 year
Private Markets	-0.6%	7.4%	9.9%	13.7%	10.8%	11.3%	12.7%	13.4%	12.1%
Private Equity	0.0%	9.0%	11.7%	16.2%	14.3%	14.8%	13.5%	15.0%	
Private Credit	1.7	8.6	13.3	15.0	13.4	12.5	12.6		
Resources	-3.8	3.5	4.3	7.9	-0.5	5.1	16.3	14.8	
Real Estate	0.7	5.8	8.6	9.4	12.1	6.5	8.8	9.4	

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.

SBI Combined Funds Strategic Allocation Category Framework

	3/31/19 ($ millions)	3/31/19 Weights	Category Ranges	
Growth - Appreciation				
Public Equity	$ 43,593.78	63.3%		
Private Equity	$ 5,325.65	7.7%		
Non-Core Real Assets	$ 2,419.17	3.5%		
Distressed/Opportunistic	$ 1,172.16	1.7%		
	$ 52,510.76	**76.3%**	*50%*	*75%*
Growth - Income-oriented				
Core Fixed Income	$ 7,870.10	11.4%		
Private Credit	$ 580.30	0.8%		
Return-Seeking Fixed Income		0.0%		
	$ 8,450.40	**12.3%**	*15%*	*30%*
Real Assets				
Core Real Estate		0.0%		
Real Assets	$ 517.76	0.8%		
	$ 517.76	**0.8%**	*0%*	*10%*
Inflation Protection				
TIPS		0.0%		
Commodities		0.0%		
		0.0%	*0%*	*10%*
Protection				
U.S. Treasuries	$ 6,203.01	9.0%		
	$ 6,203.01	**9.0%**	*5%*	*20%*
Liquidity				
Cash	$ 1,133.23	1.6%		
	$ 1,133.23	**1.6%**	*0%*	*5%*
Opportunity				
Opportunity	**$ -**	**0.0%**	*0%*	*10%*
Total	**$ 68,815.51**	**100.0%**		
Illiquid Asset Exposure	**$ 10,015.03**	**14.6%**	*0%*	*30%*

Volatility Equivalent Benchmark Comparison

Periods Ending 3/31/2019

As of (Date):	3/31/2019							
	1-year	*3-year*	*5-year*	*10-year*	*15-year*	*20-year*	*25-year*	*30-year*
SBI Combined Funds Return	**5.2%**	**10.1%**	**7.4%**	**11.6%**	**7.8%**	**6.6%**	**8.5%**	**8.9%**
Volatility Equivalent Benchmark Return	**3.5%**	**7.5%**	**5.2%**	**8.8%**	**5.9%**	**5.2%**	**6.6%**	**7.5%**
Value Added	**1.6%**	**2.6%**	**2.2%**	**2.9%**	**1.9%**	**1.5%**	**1.8%**	**1.4%**
Standard Deviation: Benchmark = Combined Funds			**6.9%**	**8.1%**	**8.9%**	**9.3%**	**9.3%**	**9.2%**
Benchmark Stock Weight	**62%**	**62%**	**62%**	**59%**	**58%**	**61%**	**62%**	**62%**
Benchmark Bond Weight	**38%**	**38%**	**38%**	**41%**	**42%**	**39%**	**38%**	**38%**

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.

Combined Funds Summary

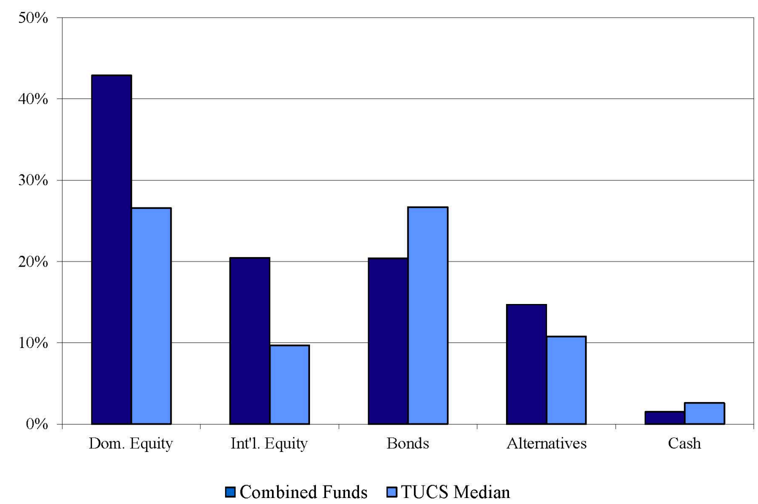
Asset Mix Compared to Other Pension Funds

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

	($Millions)	Actual Mix
Public Equity	43,594	63.3
Fixed Income	7,870	11.4
Treasuries	6,203	9.0
Private Markets	10,088	14.7
Cash	1,060	1.5
TOTAL	68,816	100.0



	Domestic Equity	International Equity	Bonds	Alternatives	Cash
Combined Funds	42.9%	20.5%	20.4%	14.7%	1.5%
Median in TUCS	26.6%	9.7%	26.7%	10.8%	2.6%

STATE STREET.

Combined Funds Summary

Performance Compared to Other Pension Funds

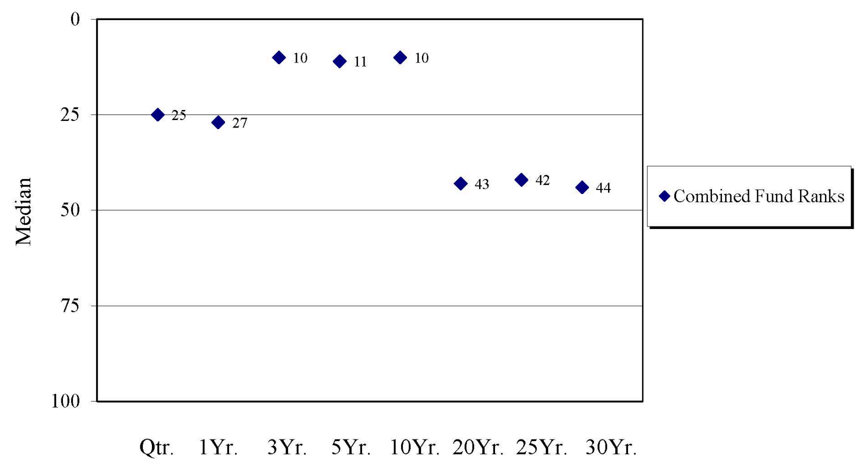
While the SBI is concerned with how its returns compare to other pension investors, universe comparisons should be used with great care. There are several reasons why such comparisons will provide an "apples to oranges" look at performance:

- 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 03/31/2019

	Qtr	1 Yr	3 Yrs	5 Yrs	10 Yrs	20 Yrs	25 Yrs	30 Yrs
Combined Funds Percentile Rank in TUCS	25th	27th	10th	11th	10th	43rd	42nd	44th

STATE STREET.

This page intentionally left blank.

TAB B

Report from the Executive Director

Administrative Report

This page intentionally left blank.

EXECUTIVE DIRECTOR'S ADMINISTRATIVE REPORT

DATE: May 23, 2019

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, 2019 is included as **Attachment A**.

A report on travel for the period from January 1, 2019 – March 31, 2019 is included as **Attachment B**.

2. Legislative Update

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

3. Participant Directed Investment Program (PDIP) Update

At the September 2018 SBI meeting, the Board authorized the Executive Director to transition the assets of the existing Supplemental Investment Funds (SIF) for the Unclassified Retirement Plan, the Health Care Savings Plan, and the Hennepin County Supplemental Retirement Plan to the mutual fund investment platform offered within the Minnesota State Deferred Compensation Program. The mapping of these investments were outlined in the Executive Director's Report provided in the August 2018 and September 2018 Investment Advisory Council (IAC) and State Board of Investment (SBI) meeting materials, respectively. As an update, the transition of the SIF assets for the plans outlined above will occur on July 1, 2019. The investment line-up has been constructed so that the mutual funds offered are competitively priced, provide more options, and is believed to create operational efficiencies and enhance plan participant experience.

4. Sudan Update

Each quarter, staff provides a report to the Board on steps taken to implement *Minnesota Statutes*, section 11A.243 that requires SBI actions concerning companies with operations in Sudan. Staff receives periodic reports from the Vigeo 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 7.8 million shares in eight companies on the divestment list.

On March 22, 2019, staff sent a letter to each international equity manager and domestic equity manager containing the most recent restricted list and the list of stocks to be divested in compliance with Minnesota law.

5. Iran Update

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

SBI receives information on companies with Iran operations from Institutional Shareholder Services, Inc. (ISS). 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 601,633 shares in four companies on the divestment list.

On March 22, 2019, staff sent a letter 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 in compliance with Minnesota law.

6. Litigation Update

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

ATTACHMENT A

STATE BOARD OF INVESTMENT
FISCAL YEAR 2019 ADMINISTRATIVE BUDGET REPORT
FISCAL YEAR TO DATE THROUGH MARCH 31, 2019

ITEM	FISCAL YEAR 2019 BUDGET	FISCAL YEAR 2019 3/31/2019
PERSONNEL SERVICES		
FULL TIME EMPLOYEES	$ 5,031,000	$ 2,840,198
PART TIME EMPLOYEES	0	0
MISCELLANEOUS PAYROLL	100,000	0
SUBTOTAL	**$ 5,131,000**	**$ 2,840,198**
STATE OPERATIONS		
RENTS & LEASES	285,000	210,365
REPAIRS/ALTERATIONS/MAINTENANCE	14,000	8,856
PRINTING & BINDING	10,000	9,706
PROFESSIONAL/TECHNICAL SERVICES	145,000	97,138
COMPUTER SYSTEMS SERVICES	162,500	115,380
COMMUNICATIONS	36,000	17,047
TRAVEL, IN-STATE	1,000	231
TRAVEL, OUT-STATE	125,000	59,415
SUPPLIES	30,000	19,044
EQUIPMENT	17,500	18,761
EMPLOYEE DEVELOPMENT	117,000	91,863
OTHER OPERATING COSTS	140,000	87,000
INDIRECT COSTS	250,000	145,834
SUBTOTAL	**$ 1,333,000**	**$ 880,639**
TOTAL ADMINISTRATIVE BUDGET	**$ 6,464,000**	**$ 3,720,837**

This page intentionally left blank.

ATTACHMENT B

STATE BOARD OF INVESTMENT

Travel Summary by Date
January 1, 2019 - March 31, 2019

Purpose	Name	Destination / Date	Total Cost
Conference: Emerging Markets Forum sponsored by Elkind Economics, Inc.	M. Perry	Irving, TX 1/9/19-1/10/19	$ 952.61
Manager Monitoring **Private Markets Managers:** Advent International; SSgA; Summit Partners; TCW Thomas H. Lee	P. Ammann	Boston, MA 1/21/19-1/23/19	776.19
Manager Monitoring **Private Markets Managers:** Hellman & Friedman; KKR; Oak Hill Capital Management **Manager Search** **Private Markets Managers:** Arsenal Capital Partners	J. Stacy	New York, NY 1/29/19-1/31/19	1,469.18
Manager Monitoring **Fixed Income Managers:** Goldman Sachs Asset Management; BlackRock **Manager Monitoring** **Emerging Markets Manager:** Morgan Stanley **Manager Search** **Fixed Income Managers:** Nomura Asset Management USA; Oak Hill Advisors **Conference:** Morgan Stanley Global Investor Conference	A. Griga	New York, NY 1/29/19-2/1/19	2,328.56

STATE BOARD OF INVESTMENT

Travel Summary by Date
January 1, 2019 - March 31, 2019

Purpose	Name	Destination / Date	Total Cost
Conference: National Association of Public Pension Attorneys (NAPPA) Winter Seminar	J. Mulé	Pheonix, AZ 2/19/19-2/22/19	$ 1,265.18
Manager Monitoring **Private Markets Managers:** MHR; Paine Schwartz; Permira; Warburg Pincus	N. Blumenshine	New York, NY 2/25/19-2/27/19	777.91
Conference: Access Alts New York Members Meet 2019 sponsored by Access Alts Asia **Manager Monitoring** **Private Markest Managers:** KKR; Neuberger Berman	M. Perry	New York, NY 3/3/19-3/5/19	1,513.47
Conference: Council of Institutional Investor Spring Conference 2019	J. Mulé	Washington, DC 3/4/19-3/6/19	1,507.65
Manager Monitoring **Private Markets Managers:** Angelo Gordon; TPG; Warburg Pincus	J. Stacy	San Francisco, CA 3/11/19-3/13/19	1,791.31
Conference: Institutional Limited Partners Association (ILPA) General Partners / Limited Partners Roundtable **Manager Search** **Private Markets Managers:** GIP; Atalaya	A. Krech	New York, NY 3/13/19-3/15/19	1,278.79

STATE BOARD OF INVESTMENT

Travel Summary by Date
January 1, 2019 - March 31, 2019

Purpose	Name	Destination / Date	Total Cost
Conference: Government Investment Officers Association (GIOA)	S. Kuettel	Las Vegas, NV 3/19/19-3/22/19	$ 1,265.60
Manager Monitoring **Private Markets Managers:** Apax Partners; Rockwood Capital	J. Stacy	New York, NY 3/25/19-3/28/19	1,582.34

This page intentionally left blank.

BILLS OF INTEREST TO THE MINNESOTA STATE BOARD OF INVESTMENT

Bill No.	Author	Name of Bill	Current Status	Notes
HF2796 SF2770	Lillie, et al. Koran, et al.	SBI Compensation Plan Ratification	05/19: HF2796 passed by the house unanimously and transferred to the senate; on 05/20 the senate gave the bill its first reading and the bill was subsequently tabled. 05/18: SF2770 was passed by Senate Finance	The bill would ratify changes to the SBI salary plan as approved by the Board at the December 2018 meeting. Note that the salary plan may be subject to review by the Subcommittee on Employee Relations.
SF2307 **SF2314**	Chamberlain, et al.	TCE Emission Fine Disposition **Omnibus Environment and Natural Resources**	05/06:SF2307 passed unanimously and was transmitted to the house. The house referred the bill to the Environment and Natural Resources Policy Committee 04/11: SF2314 is in conference committee; the house version does not contain the same language	The bill would provide authority for the SBI to invest funds the state received from a civil penalty related to Trichloroethylene emissions. The funds are being paid to PCA. The bill's language is permissive, so PCA may choose not to invest the assets with SBI. Art. 1 Sec. 118.
SF802	Limmer, et al.	**Omnibus Public Safety**	05/06: SF802 was reviewed in conference committee	The house version of the bill contains language clarifying that certificate of compliance with affirmative action plan requirements apply to businesses with 40 or more employees in Minnesota or in a state where the business has its primary place of business. Art. 20 Sec. 6.
HF2294 SF2277	Long, et al. Pappas, et al.	Fossil Fuel Divestment Act	04/09: HF2294: The LCPR held a hearing on the bill on 03/19 and the bill was laid over by the chair. On 04/09 the bill was offered as an amendment to the Omnibus State Government Finance bill during the Government Finance Committee meeting. The amendment failed to pass 03/20: SF2277: The LCPR held a hearing on the bill on 03/19 and the bill was laid over by the chair. The bill is currently referred to the State Government Finance and Policy and Elections Committee on 03/11	The bill would prohibit the SBI from making new investments in fossil fuel companies. The bill would require the SBI to divest from existing fossil fuel investments by July 1, 2024. The bill defines a fossil fuel company as any company among "the two hundred largest publicly traded fossil fuel companies as established by carbon content in the companies' proven oil, gas, and coal reserves." The requirements apply to the combined investment funds as established under Minn. Stat. §11A.24. The bill also contains a clause meant to absolve the Board members of any conflicts between the divestment obligation and the board members' statutory or common law fiduciary duties.

HF2329 SF2276	Long, et al. Pappas, et al.	SBI Report on Fossil Fuel Divestment	03/20: HF2329: The LCPR held a hearing on the bill on 03/19 and the bill was laid over by the chair. The bill was referred to the Government Operations Committee on 03/11 03/20: HF2075: The LCPR held a hearing on the bill on 03.19 and the bill was laid over by the chair The bill was referred to the State Government Finance and Policy and Elections Committee on 03/11	The bill would require the SBI to produce a report on the feasibility of fossil fuel divestment by February 1, 2020. The report must contain, among other things, an assessment of the SBI's exposure to fossil fuel investments, definitions of fossil fuel and renewable energy investments, the potential costs of divestment, and a description of measures the SBI could take to mitigate the cost of divestment.
HF2836	Hornstein, et al.	Minnesota Green New Deal	04/12: HF2836 was referred to the Energy and Climate Finance and Policy Division	The bill would require the SBI to evaluate the risks and impacts of divesting from fossil fuel companies (exploring, drilling, processing, transporting, sale) and investing the assets in other companies.
HF0472 SF0636	Nelson, et al. Pappas, et al.	Minnesota Secure Choice Program	01/28: HF2570 was referred to the Government Operations Committee 01/31: SF0636 was referred to the State Government Finance and Policy and Elections Committee	The bill creates two state-sponsored retirement plans for private employers. Employers may enter into an agreement with the secure choice board for a multi-employer defined contribution plan which would allow for employer and employee contributions. If an employer does not enter the DC plan, the employer must automatically enroll each eligible employee in an individual retirement account plan. Employees would receive notice of enrollment in the IRAP and have the ability to opt out of the plan. The board would oversee the administration of the plans, which would include choosing investment options made available by the SBI under the same statutory authorization as the Unclassified and Deferred Compensation Plans. The SBI Executive Director (or designee) would serve on the board. SBI would potentially have fiduciary duties under Minn. Stat. Ch. 356A and sections 404 and 408 of ERISA.
HF1728 SF2276	Fabian Johnson	Financial Assurance Money Investment	02/25: HF1728 was referred to the Environment and Natural Resources Finance Committee 03/11: SF2337 was referred to the Environment and Natural Resources Finance Committee	The bill would provide authority for the SBI to invest the financial assurance money received by the state as consideration for permits issued for mining. The bill creates an account within the environmental remediation fund. The SBI would work jointly with DNR to establish an asset allocation. All account activity would be subject to the SBI's non-retirement policies and procedures.
HF2623	Mahoney	Technology Training Account Established	03/20: HF 2623 was referred to the Jobs and Economic Development Finance Committee	The bill would provide authority for the SBI to invest the assets of a separate technology training account established through DEED.

HF2736	Murphy, et al.	Tom Rukavina Community Scholarship Fund	03/27: HF2736 was referred to the Ways and Means Committee	The bill creates a scholarship fund for Saint Louis County. The bill provides that the SBI must invest the assets of the fund. The funds must be used to provide scholarships at eligible MnSCU institutions.

This page intentionally left blank.

TAB C

Report from the SBI Administrative Committee

This page intentionally left blank.

SBI ADMINISTRATIVE COMMITTEE REPORT

DATE: May 23, 2019

TO: Members, State Board of Investment

FROM: SBI Administrative Committee

The Administrative Committee met on April 23, 2019 to consider the following agenda items:

- Review of Executive Director's Proposed Work Plan for FY20
- Review of Budget Plan for FY20 and FY21
- Review of Continuing Fiduciary Education Plan
- Review of Executive Director's Evaluation Process
- Update of Business Continuity Plan

The members of the SBI Administrative Committee are:

Karl Procaccini	Chair and Governor's Representative
Bibi Black	Secretary of State's Representative
Ramona Advani	State Auditor's Representative
Christie Eller	Attorney General's Representative
Erin Leonard	Minnesota State Retirement System (MSRS)
Jay Stoffel	Teachers Retirement Association (TRA)
Doug Anderson	Public Employees Retirement Association (PERA)
Gary Martin	IAC Representative
Shawn Wischmeier	IAC Representative

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

1. Review of Executive Director's Proposed Work Plan for FY20.

The Executive Director's Proposed Work Plan for FY20 was presented. As in previous work plans, the FY20 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 April 2019 as part of the FY20 Management and Budget Plan document.

RECOMMENDATION:

The Committee recommends that the SBI approve the FY20 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 FY20.

The Investment Advisory Council (IAC) endorses the above recommendation.

2. Review of Budget Plan for FY20 and FY21.

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 9** of this Tab. Supporting information was sent to each Board member in April 2019 as part of the FY20 Management and Budget Plan.

RECOMMENDATION:

The Committee recommends that the SBI approve the FY20, and FY21 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.

The Investment Advisory Council (IAC) endorses the above recommendation.

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 15** 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 FY19. 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.

This page intentionally left blank.

ATTACHMENT A

STATE BOARD OF INVESTMENT
Executive Director's Proposed Work Plan

FY20
(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. Implementation Platform for the Participant Directed Investment Program (PDIP)	May – Sep.

B. IMPLEMENTATION OF INVESTMENT POLICIES APPROVED BY THE SBI	
1. Implementation of New Investment Structure for the State's 529 College Savings Plan	Mar. – Jul.
2. Portfolio Rebalancing: Transition Management	Ongoing
3. Meet or Exceed the Performance Objectives	Ongoing
4. Investments with New and Existing Private Markets Managers	Ongoing
5. Manager Search Process	Ongoing
6. Conduct Investment Manager Portfolio and Compliance Review of Guidelines and Contracts	Ongoing
7. Implement State Law Concerning Iran	Ongoing
8. 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 Fiscal Year 2020	Jul. – May
4. Prepare Fiscal Year 2021 Management and Budget Plan	Mar. – Jun.
5. Annual Update of Business Continuity Plan	Apr. – Jun.
6. Prepare Annual Supplemental Investment Fund (SIF) Investment Options Prospectus and Information Booklet for the Statewide Volunteer Firefighter Retirement Plan (SVFRP)	May – Sep.
7. Prepare Annual Non-Retirement Prospectuses for the Trusts and Other Participating Entities; Other Postemployment Benefits (OPEBs); and Qualifying Governmental Entities	May – Sep.
8. 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 2019 Annual Report	Jul. – Jan.

6.	Coordinate Public Pension Plan Performance Reporting Disclosure	Ongoing
7.	Conduct Manager Roundtables/IAC Discussions	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.

This page intentionally left blank.

ATTACHMENT B

Administrative Budget
Fiscal Year 2020 & 2021 Budget Plan
Overview

The Fiscal Years 2020 and 2021 budget process is based on budget procedures instituted by Minnesota Management and Budget. The SBI receives a General Fund appropriation (currently $139,000) to support the management of 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 2020 budget contains funding for 30 Full Time Equivalent (FTE) positions, which is the same as the Fiscal Year 2019 budget request. The SBI has included a 3% projected salary increase in the budget for all staff in Fiscal Years 2020 and 2021. The 3% salary increase extends to the Executive Director to accommodate a salary increase that may be approved by the Board in the Executive Director annual evaluation process. The investment staff salaries also include a 3% performance increase for the annual salary administration during performance reviews. We have increased the Other Benefits section of the salary budget as we have four staff that are eligible for retirement and their severance costs, if all four retired during FY20, would greatly exceed the $125,000. The actual salary increases for non-investment staff will be determined by legislative negotiated contracts per bargaining unit. The investment staff salary increases, if any, will be determined in accordance with the SBI Salary Plan.

In Fiscal Years 2020 and 2021, the SBI anticipates an increase in the operating expense portion of the budget for Professional Technical Services, Computer System Services, Employee Development, Indirect Costs and the Equipment line items. The increase to the Professional Technical Services portion of the budget is due to the contract with our international tax provider. With changes in the international market place, it was essential that we engage a tax provider for our international markets. The Computer System Services budget line increased because of the contract we entered for a Client Relationship Management (CRM) software. The CRM software will help us organize, track and provide record retention during all phases of the investment process including acquisition, research, due diligence and compliance. The Employee Development line item has been increasing over the last few budgets because of the reduction of the SBI's directed commission budget. Memberships to investment organizations and research sites had historically been paid from directed commissions. The directed commissions revenues have decreased due to the SBI's reduction in active management and the changes to the rules in the international markets. In Fiscal Year 2019, we paid approximately $85,000 in memberships that were historically paid from directed commissions. In Fiscal 2020 we are moving an additional $10,000 in memberships from directed commission to the SBI Administrative budget. The SBI pays indirect costs to MMB and the Attorney General's Office for services they provide that are funded from their General Fund budget. The largest portion of the SBI's Indirect Cost budget is for audit expenses conduct by the Legislative Auditors office. As the SBI has grown in funds under management, so has our audit hours. We did a thorough review of our equipment and we have determined that we will need to replace a copier, two printers, desktop computers and old furniture with approved ergonomic furniture. In addition, we are planning on adding laptops for staff that travel significantly.

Administrative Budget
Fiscal Year 2020 & 2021 Budget Plan

	FY2019 Budget	FY2019 Projected	FY2020 Request	FY2021 Request
Personnel Services	$5,131,000	$3,906,000	$5,684,000	$5,835,000
Operating Expense	1,333,000	1,216,800	1,488,000	1,461,000
Total	$6,464,000	$5,122,800	$7,172,000	$7,296,000

Personnel Services: Personnel Services are estimated to account for 79% of the requested Fiscal Year 2020 budget and 80% of the requested Fiscal Year 2021 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 2020 budget, and 20% of the requested Fiscal Year 2021 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 2020 & 2021 Budget Plan
Overview

The SBI currently has three Investment Support Services contracts that are funded from the Investment Support Services budget. The SBI had intended to contract for Private Markets consultant(s) during FY19 that was budgeted at two to three million per year. The SBI did not contract Private Markets consultant(s) during FY19 but will continue to budget for these services in FY20 and FY21.

	FY2019 Budget	**FY2019 Projected**	**FY2020 Request**	**FY2021 Request**
Investment Support	$5,000,000	$1,120,000	$5,000,000	$5,000,000
Total	$5,000,000	$1,120,000	$5,000,000	$5,000,000

Investment Support: The Investment Support Services budget will cover the following contracts for FY20 and FY21: Aon Hewitt Investment Consulting Inc., Meketa Investment Group, Broadridge Financial Solutions, Inc. and Private Markets consultant(s) services.

STATE BOARD OF INVESTMENT
ADMINISTRATIVE BUDGET PLAN
FISCAL YEARS 2020 AND 2021

DESCRIPTION	FY2019 BUDGET	FY2019 PROJECTED	FY2020 PROPOSED	FY2021 PROPOSED
PERSONNEL SERVICES				
FULL TIME EMPLOYEES	$ 5,031,000	3,791,000	$ 5,559,000	$ 5,710,000
OTHER BENEFITS	100,000	115,000	125,000	125,000
SUBTOTAL	$ 5,131,000	$ 3,906,000	$ 5,684,000	$ 5,835,000
STATE OPERATIONS				
RENTS & LEASES	285,000	281,000	285,000	285,000
PRINTING & BINDING	12,000	11,100	12,000	12,000
PROFESSIONAL/TECHNICAL SERVICES	205,000	115,200	260,000	260,000
COMPUTER SYSTEMS SERVICES	95,000	133,500	120,000	125,000
COMMUNICATIONS	36,000	23,000	25,000	26,000
TRAVEL, IN-STATE	1,000	400	1,000	1,000
TRAVEL, OUT-STATE	125,000	87,000	125,000	125,000
EMPLOYEE DEVELOPMENT	115,000	105,000	125,000	125,000
SUPPLIES	30,000	25,000	30,000	30,000
REPAIRS/ALTERATIONS/MAINTENANCE	14,000	13,600	20,000	20,000
INDIRECT COSTS	250,000	281,000	300,000	300,000
OTHER OPERATING COSTS	140,000	116,000	125,000	125,000
EQUIPMENT	25,000	25,000	60,000	27,000
SUBTOTAL	$ 1,333,000	$ 1,216,800	$ 1,488,000	$ 1,461,000
TOTAL MSBI OPERATING FUND	$ 6,464,000	$ 5,122,800	$ 7,172,000	$ 7,296,000
PERCENT INCREASE (DECREASE) OVER PRIOR YEAR BUDGET			11.0%	1.7%

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

DESCRIPTION	FY2019 BUDGET	FY2019 PROJECTED	FY2020 PROPOSED	FY2021 PROPOSED
STATE OPERATIONS				
PROFESSIONAL/TECHNICAL SERVICES	4,500,000	800,000	4,500,000	4,500,000
COMPUTER SYSTEMS SERVICES	500,000	320,000	500,000	500,000
TOTAL	$ 5,000,000	$ 1,120,000	$ 5,000,000	$ 5,000,000
PERCENT INCREASE (DECREASE) OVER PRIOR YEAR BUDGET			0.0%	0.0%

STATE BOARD OF INVESTMENT
DIRECTED COMMISSIONS
CALENDAR YEAR 2018

DESCRIPTION	CY2018 BUDGET	CY2018 ACTUAL	CY2019 PROPOSED
DIRECTED COMMISSIONS			
DIRECTED COMMISSIONS	992,500	1,094,357	1,127,000
PERCENT INCREASE (DECREASE) OVER PRIOR YEAR BUDGET			13.55%

This page intentionally left blank.

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 $10,000 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.

2018 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 D

Investment Advisory Council Report

Private Markets Program

This page intentionally left blank.

INVESTMENT ADVISORY COUNCIL REPORT

DATE: May 23, 2019

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and SBI Staff

SUBJECT: Private Markets Commitments for Consideration

Staff has reviewed the following action agenda item:

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

Existing Managers:

Private Equity	Apax Partners	Fund X	$150 Million
Private Equity	IK Investment Partners	Fund IX	€135 Million
Private Equity	KKR	European Fund V	$100 Million
Private Equity	Permira	Fund VII	€135 Million
Private Equity	TPG Capital	Fund VIII	$150 Million
Private Equity	Warburg Pincus	WPC-SEA II	$50 Million
Private Credit	LBC	Credit Partners V	$100 Million
Real Assets	Energy & Minerals Group	Fund V & Accordion	$150 Million

SBI action is required on item B.

A. Status of SBI Current Private Markets Commitments

Minnesota State Board of Investment

Combined Funds

March 31, 2019

Combined Funds Market Value	$68,815,508,122
Amount Available for Investment	**$4,063,798,762**

	Current Level	Target Level	Difference
Market Value (MV)	$10,015,033,002	$17,203,877,031	$7,188,844,029
MV +Unfunded	$20,021,629,081	$24,085,427,842.70	$4,063,798,762

Asset Class	Market Value	Unfunded Commitment	Total
Private Equity	$5,325,649,430	$5,863,223,888	$11,188,873,318
Private Credit	$580,296,857	$948,448,800	$1,528,745,657
Real Assets	$2,158,312,119	$927,416,579	$3,085,728,698
Real Estate	$778,613,013	$1,412,487,784	$2,191,100,797
Distressed/Opportunistic	$1,172,161,583	$855,019,028	$2,027,180,611
Total	$10,015,033,002	$10,006,596,079	$20,021,629,081

Cash Flows

March 31, 2019

Calendar Year	Capital Calls	Distributions	Net Invested
2019 (3 months)	$457,004,400	($441,220,147)	$15,784,253
2018	$1,992,000,341	($2,049,733,815)	($57,733,474)
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)

B. Consideration of New Investment Commitments

ACTION ITEMS:

1) **Investment with an existing private equity manager, Apax Partners ("Apax"), in Apax X USD L.P. ("Apax X").**

   Apax is forming Apax X to continue the Apax Funds' established strategy of investing in buyouts globally across its four sectors, Tech & Telco, Services, Healthcare, and Consumer. Apax's sector knowledge is complemented by its strong digital capability, which supports the execution of digital investments and helps Apax Funds' portfolio companies to exploit digital opportunities. The Firm currently anticipates that Apax X will invest approximately 35-50% of its capital in each of Europe and North America, and approximately 10-15% in the Rest of World.

   In addition to reviewing the attractiveness of the Apax X 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 Apax X 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 $150 million, or 20% of Apax X USD L.P., whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 Apax 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 Apax Partners or reduction or termination of the commitment.

2) **Investment with an existing private equity manager, IK Investment Partners ("IK"), in IK IX Fund ("IK IX").**

   IK is seeking investors for a new private equity fund to make control buyouts of middle market companies with strong growth potential in Northern Europe. Fund IX will be a continuation of the mid-cap strategy that has IK has developed over the course of eight prior funds. A centerpiece of IK's investment strategy is to seek to double the earnings of its portfolio companies by transforming strong local businesses into international leaders through add-on acquisitions and operational improvement. In the 41 investments made over the last 10 years, over 75% have executed on buy-and-build via 122 add-on acquisitions so far.

In addition to reviewing the attractiveness of the IK IX Fund 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 the IK IX Fund 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 €135 million, or 20% of the IK IX Fund, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 IK Investment 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 IK Investment Partners or reduction or termination of the commitment.

3) **Investment with an existing private equity manager, Kohlberg Kravis Roberts & Co. ("KKR") in KKR European Fund V, L.P. ("Fund V").**

KKR is establishing Fund V to continue its history of making investments into companies primarily in the developed economies of Western Europe. The Fund's investments are generally expected to be made in the form of management buyouts, build-ups, partnership deals or other investments with a view to acquire a controlling interest or other significant influence. The focus of the investment strategy is expected to be predominantly on the European upper mid-market, or deals with an enterprise value range of €500 million to €2 billion.

In addition to reviewing the attractiveness of the KKR European Fund V, L.P. 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 Fund V 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 KKR European Fund V, L.P., whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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.

4) Investment with an existing private equity manager, Permira, in Permira VII L.P.1 ("Fund VII").

Permira is forming Fund VII to invest in market-leading businesses that benefit from strong and resilient underlying growth trends, identified through a proven sector thematic investment strategy. Through active and engaged ownership, applying a repeatable value creation toolkit, the Fund will seek to accelerate sustainable growth and drive major business transformation. Fund VII will target investments in the U.S., Western Europe, and Asia, and will focus on the following sectors: Technology, Consumer, Industrials, Financial Services, and Healthcare.

In addition to reviewing the attractiveness of the 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 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 €135 million, or 20% of Permira VII L.P.1, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Permira upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Permira or reduction or termination of the commitment.

5) Investment with an existing private equity manager, TPG Capital ("TPG"), in TPG Partners VIII, L.P. ("Fund VIII").

TPG is forming Fund VIII to make middle- and large- market private equity investments in North America and Europe. TPG believes that investors will benefit from the TPG Capital ecosystem, which has been developed over a long history of successful investing, and from a strategic focus centered around: 1) a sector-driven, thematic approach to sourcing, 2) value creation through operational improvement and 3) differentiated deal types.

In addition to reviewing the attractiveness of the Fund VIII 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 Fund VIII 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 TPG Partners VIII, L.P., whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 TPG 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 TPG or reduction or termination of the commitment.

6) **Investment with an existing private equity manager, Warburg Pincus, in Warburg Pincus China-Southeast Asia II ("WPC-SEA II").**

Warburg Pincus is forming WPC-SEA II to make equity investments in China and Southeast Asia alongside best-in-class entrepreneurs and businesses in rapidly growing areas of the economy that the firm believes can benefit from the ongoing economic and structural transformations occurring in the region. The China and Southeast Asia Team tends to focus on sectors that it believes are capable of continuing to deliver 15% to 25% annual top-line growth rates, even in times of lower overall gross domestic product growth.

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

More information on WPC-SEA II 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 $50 million, or 20% of Warburg Pincus China-Southeast Asia II, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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.

7) **Investment with an existing private credit manager, LBC Credit Management ("LBC") in LBC Credit Partners V, L.P. ("Fund V").**

LBC is forming Fund V to maximize current return while preserving Limited Partners' capital primarily by directly originating and managing a diversified portfolio of senior loans to middle market companies. LBC defines middle market companies as those with revenues of typically less than $750 million and EBITDA of $5 billion to $50 million. Fund V will structure loans with maturities ranging generally from three to seven years. Typical investments will likely range in size between $20 million and $50 million.

In addition to reviewing the attractiveness of the 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 Fund V 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 $100 million, or 20% of LBC Credit Partners V, L.P., whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 LBC Credit Management 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 LBC Credit Management or reduction or termination of the commitment.

8) **Investment with an existing real assets manager, The Energy & Minerals Group, ("EMG"), in The Energy & Minerals Group Fund V ("Fund V") and Energy & Minerals Group Fund V Accordion ("Accordion").**

EMG is forming Fund V to invest in the natural resource industry, which includes the entire energy complex, and all facets of the minerals and metals industry. EMG will place a particular emphasis on non-substitutable, industrial commodities. EMG has expertise across the entire value chain of the energy sector as well as the steel industry inputs, base metals and battery raw material inputs that enables it to understand current sub-sector dynamics and prudently identify areas of opportunity.

In addition to reviewing the attractiveness of the 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 EMG Fund V and EMG Fund V Accordion 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 $150 million, or 20% of The Energy & Minerals Group Fund V and Accordion, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. 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 The Energy and Minerals Group upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on The Energy and Minerals Group or reduction or termination of the commitment.

ATTACHMENT A

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Apax X USD L.P.
Type of Fund:	Private Equity – Buyout
Target Fund Size:	$10.5 billion
Fund Manager:	Apax X USD GP L.P. Inc.
Manager Contact:	David Kim 601 Lexington Avenue New York, NY 10022

II. Organization and Staff

Apax Partners ("Apax" or the "Firm") was founded nearly 50 years ago in Europe and North America. It has been transatlantic for decades and remains active in both markets. The Firm began as a venture capital business raising country-specific funds in the U.S. and Europe. From 1993, Apax started to recommend investments in buyouts and raised "balanced funds" with a growing portion of capital invested in buyouts over venture capital. At the same time, country teams were being merged, and regional rather than country-specific funds were raised. In 1999, led by the increasing regionalization, and ultimately, globalization of businesses, the Firm raised its first pan-European fund to succeed the series of national funds it had raised since 1981. When Apax Europe V was raised in 2001, 78% of the capital raised for that fund was invested in buyouts. Currently, and for the last 18 years, the Firm has focused on equity buyout transactions.

Today, Apax is led by co-CEOs Andrew Sillitoe and Mitch Truwit, who have held these positions since 2014. Together, they lead a team of over 120 investment professionals including the Operational Excellence Practice ("OEP"), which is a team of 16 operators organized along functional lines designed to complement the deal teams by bringing different skills and expertise. Apax investment and OEP professionals are based in seven offices: London, New York, Munich, Mumbai, Tel Aviv, Shanghai, and Hong Kong.

III. Investment Strategy

Apax is seeking to raise Apax X (the "Fund") to continue the Apax Buyout Funds' established strategy of investing in buyouts globally across its four sectors, Tech & Telco, Services, Healthcare and Consumer (the "Apax Sectors"), with its digital capability as a horizontal specialization spanning across sectors. The investment strategy of Apax X will leverage Apax's long-standing sector focus and sub-sector knowledge, their global platform, which provides opportunities for Apax X to invest flexibly across geographies, and Apax's strong operational capabilities, which allow for transformational improvements in portfolio companies, including digital acceleration.

Within the four Apax Sectors, Apax seeks to identify attractive sub-sectors that display unique characteristics or compelling investment themes. Apax often can drive repeat success by investing in a proven sub-sector strategy over time and across multiple geographies. In each of Apax VIII and Apax IX, approximately 60% of the capital has been invested in six core sub-sectors (software, IT Services / BPO, digital marketplaces, route-based logistics/distribution, medical devices, and outsourced sales and marketing services). Apax's sector knowledge is complemented by its strong digital capability, which supports the execution of digital investments (e.g. digital marketplaces) and helps Apax Funds' portfolio companies to exploit digital opportunities. To date, Apax VIII and Apax IX have invested 37% and 50% of their capital in Tech & Digital respectively and Apax estimates that about 80% of the Apax buyout fund investments since 2010 have been impacted by digital transformation opportunities and projects.

Apax seeks to create value by supporting transformational improvements in portfolio companies. This is led by deal teams together with the Firm's dedicated Operational Excellence Practice. The OEP is a team of functional experts who strive to generate measurable operational impact and transformation in Apax Funds' portfolio companies. They have specific experience in verticals which are relevant for all the Apax sectors: digital acceleration, margin expansion, technology & operations, carve-outs & integration, and sales & go-to-market. In addition, the OEP will support deal teams prior to acquisition by identifying value creation opportunities during due diligence and seeking to win over management teams.

Continuing with previous Apax funds, Apax does not fix capital allocations by region, but rather adopts a flexible and opportunistic approach to identify the best deals in each sector with an aim to avoid overvalued markets and to arbitrage relative value in attractive geographies. The Firm currently anticipates that Apax X will invest approximately 35-50% of its capital in each of Europe and North America, and 10-15% in the Rest of World.

IV. *Investment Performance*

Previous fund performance as of December 31, 2018 is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
AEV	2001	€4.4 billion	--	28.5%	1.9	1.9
AEVI	2005	€4.3 billion	--	12.8%	2.0	1.9
USVII	2006	$856 million	--	13.3%	2.0	1.8
AEVII	2007	€11.2 billion	--	7.6%	1.5	1.3
AVIII USD	2012	$3.8 billion	$200 million	13.6%	1.5	1.0
AVIII EUR	2012	€2.8 billion	--	14.5%	1.6	1.0
AIX USD	2016	$7.0 billion	$150 million	15.9%	1.2	0.0
AIX EUR	2016	€2.2 billion	--	15.7%	1.2	0.0

* Previous fund investments are not indicative of future results. Net IRR, Net MOIC, and Net DPI were provided by Apax

V. Investment Period and Term

The fund will have a five-year investment period and a ten-year term, with the potential of three one-year extension periods.

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

This page intentionally left blank.

ATTACHMENT B

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	IK IX Fund
Type of Fund:	Private Equity
Target Fund Size:	€2.5 billion
Fund Manager:	IK Investment Partners
Manager Contact:	Alice Langley The Adelphi 1-11 John Adam Street London, England,WC2N 6HT

II. Organization and Staff

IK Investment Partners ("IK" or the "Firm") is sponsoring IK IX Fund (the "Fund" or "IK IX") to make control buyouts of middle market companies with strong growth potential in Northern Europe. Fund IX will be a continuation of the mid-cap strategy that has IK has developed over the course of eight prior funds.

The Firm was founded in 1989 by Bjorn Saven, who now serves as non-executive Chairman. The investment team is comprised of 75 investment professionals, of which 40 are dedicated to the Firm's middle market strategy. The IK Mid Cap investment team is led by Dan Soudry and supported by IK's CEO Christopher Masek, who is the Chairman of the Mid Cap Investment Committee. In addition to Mr. Soudry and Mr. Masek, the Mid Cap senior investment staff is made up of Alireza Etemad and Thomas Klitbo in the Nordic region, Remko Hilhorst and Norman Bremer in Benelux, Remi Buttiaux in France, and Andres Petersson and Mirko Jablonsky in Germany, Austria and Central Europe ("DACH"). Johan Van de Steen leads the Firm's Operations team. IK's investment teams operate out of local offices in Amsterdam, Copenhagen, Hamburg, Paris and Stockholm, while administrative and back office functions are based out of London and Luxembourg.

III. Investment Strategy

IK IX will seek to invest in regional middle market companies in Northern Europe with strong potential for growth and attempt to double the earnings of each company through add-on acquisitions and international expansion, and operational improvements. IK believes that its strategy is differentiated across several dimensions:

Middle Market Focus: The Fund will focus primarily on companies with enterprise value of between €100-€500 million, investing equity of between €50 million and €150 million in approximately 18 companies. The average enterprise value of investments made over the last 10 years was approximately €213 million. IK believes that by focusing on this segment of the lower middle-market it is able to exploit inefficiencies that are not present at the larger end of the market, as well as avoid competition from larger pan-European or Global funds.

Geographic Focus: IK IX will focus on Northern Continental Europe, primarily Benelux (Belgium, the Netherlands and Luxembourg), DACH (Germany, Austria and Switzerland), France and the Nordic region. These are collectively known as IK's "Core Markets," and the firm has been active in each for nearly 20 years. A small portion of the Fund may be opportunistically invested outside the Core Markets, for instance in the Central & Eastern Europe region (primarily Poland). The Firm's investment professionals are organized into five regional teams (Benelux, DACH, France, Denmark & Norway, and Sweden & Finland) to better serve this unique geographic footprint.

Sector Focus: Over its 30-year history, IK has transitioned from a generalist approach to become a firm broadly focused on the industrial goods, consumer goods, business services, and care sectors. In particular, IK has developed a strong track record and deep industry network within the engineered products, consumer/food, business services, and healthcare subsectors. The Firm's networks and industry knowledge often provide early access to owners and management, allowing IK to limit the level of competition around target companies and helping the Firm position itself as a knowledgeable and supportive partner to management.

Sourcing: IK sources investment opportunities by combining a strategic screening process with proactive outreach. All new potential investments are evaluated against a consistent set of investment criteria: the aforementioned size, geography, and sector, as well as performance, positioning, and potential. In terms of company performance, IK seeks to invest in high EBITDA margin businesses with strong EBITDA-to-cash conversion rates. In the 41 mid cap investments made by IK over the last 10 years, the EBITDA margin was over 20%, and the cash conversion rate was 77%. The ideal acquisition target is positioned as a leader in its local market, has a sustainable competitive advantage, and has a defensible market share. Finally, a prospective IK investment should have potential to realize significant strategic and operational improvement as the result of an international buy-and-build strategy. The IK team spends significant time and energy to create the opportunities to invest in these types of companies at an attractive basis by actively marketing the Firm's capabilities to business owners, industrial advisors, M&A houses, management teams, financing sources, and other industry participants. Over the last 10 years, these sourcing efforts resulted in IK pre-empting an auction or participating in a limited auction with respect to 61% of its investments.

Ownership: A centerpiece of IK's investment strategy is to seek to double the earnings of its portfolio companies by transforming strong local businesses into international leaders through add-on acquisitions and operational improvement. In the 41 investments made over the last 10 years, over 75% have executed on buy-and-build via 122 add-on acquisitions so far. IK believes that its international footprint has given the Firm the ability to identify investment opportunities outside a company's local market that enhance growth by providing the company access to new markets, products, technology, and services. To add value to its portfolio companies, IK also engages in a systematic program of operational improvement that include both a 100 Day Plan as well as Mid-term Plans. This value creation program is called the "IK

Way Toolkit," and is implemented by the IK deal team with support from the Strategy, Operations and Business Control team. The IK Way Toolkit includes initiatives to improve top-line growth and cost efficiencies as well as balance sheet optimization and management augmentation. In addition, IK encourages its portfolio companies to implement responsible environmental, social, and governance policies in order to manage business risks, increase brand value, and pre-empt regulatory changes.

Exit: As with sourcing and value creation, IK has a common structure and process for realizing a successful exit. Exit planning is an important part of the due diligence process, and likely exit options are a part of every investment proposal. Once an investment is completed, regular reviews take place that include a "Hold/Sell" analysis, consider multiple exit paths and evaluate incremental return prospects. These reviews help ensure objectivity from the deal team and challenge the team to justify why an investment should continue to be held. Given IK's typical investment size, most historical exits have been to a strategic or financial buyer.

IV. Investment Performance

Previous fund performance as of September 30, 2018 for IK Investment Partners is shown below:

Fund	Inception Date	Total Commitments	SBI Investment	Net IRR*	Net MOIC*
IK 1989 Fund	1989	€108 million	--	26%	5.3
IK 1994 Fund	1994	€250 million	--	40%	3.8
IK 1997 Fund	1997	€750 million	--	9%	1.7
IK 2000 Fund	2000	€2,100 million	--	9%	1.6
IK 2004 Fund	2004	€825 million	--	33%	2.2
IK 2007 Fund	2007	€1.7 billion	--	8%	1.5
IK VII	2013	€1.4 billion	€150 million	16%	1.6
IK VIII	2016	€1.9 billion	€150 million	13%	1.1

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

V. Investment Period and Term

The Investment Period will last for a period of five years. The Fund will have a term of ten years, with the possibility of three one-year extensions.

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

This page intentionally left blank.

ATTACHMENT C

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	KKR European Fund V, L.P.
Type of Fund:	Private Equity
Target Fund Size:	€5 Billion
Fund Manager:	KKR European Fund V SCSp
Manager Contact:	Ari Barkan 9 West 57th Street New York, NY, 10019

II. Organization and Staff

Kohlberg Kravis Roberts & Co. ("KKR" or the "General Partner"), one of the world's oldest and most experienced private equity firms, is headquartered in New York, NY and has over twenty office locations globally. Founded in 1976 by Jerome Kohlberg, Henry R. Kravis and George R. Roberts, KKR seeks to provide its investors with long-term capital appreciation through multiple business platforms. During the first two decades, KKR focused on building a leading private equity business.

KKR has been investing in Europe since 1996 and opened its first European office in London in 1998. The European private equity team has grown to over 40 investment professionals today, supported by 12 operational professionals in KKR Capstone, seven capital markets specialists in KKR Capital Markets, as well as the deep resources of the Firm globally. The Members, Managing Directors, and Directors of the European private equity team have an average tenure of nine years at KKR and an average of 16 years of industry experience.

KKR has invested over €17 billion in European private equity since 1996 across 59 transactions. This includes the investments made by their five dedicated European Funds, investing in multiple countries and sectors, and through various economic cycles.

III. Investment Strategy

KKR is establishing KKR European Fund V (the "Fund" or "Fund V") to continue its history of making investments into companies primarily in the developed economies of Western Europe. The Fund's investments are generally expected to be made in the form of management buyouts, build-ups, partnership deals or other investments with a view to acquire a controlling interest or other significant influence. The focus of the investment strategy is expected to be predominantly on the European upper mid-market, or deals with an enterprise value range of €500 million to €2 billion, although Fund V will also have the flexibility to invest in larger or smaller transactions opportunistically.

The KKR European private equity team is organized into a matrix of regional and sector specialists. The seven regional coverage areas are the UK, the DACH region (Germany, Austria and Switzerland), the Nordics, France, Italy, Spain, and the Benelux region (The Netherlands, Belgium and Luxembourg). The sector specialist teams cover Business Services, Consumer & Retail, Financial Services, Health Care, Industrials, and TMT. All regional and sector teams are supported by a generalist pool of associates and analysts. Within Europe, the Members, Managing Directors, and Directors of the European private equity team have been at KKR on average for nine years and have an average of 16 years of industry experience.

In addition to having a strong local team, KKR believes that one of its key differentiators as an investor in European private equity is their ability to combine local knowledge and expertise with the global resources of one of the world's pre-eminent private equity businesses. The KKR Europe team works together with KKR Capstone, a team of approximately 55 global operational professionals that has been an integral part of portfolio operations in the Firm since the early 2000s. Furthermore, the KKR Europe team also utilizes the following KKR resources:

- KKR Capital Markets
- Public Affairs
- KKR Global Institute
- Global Macro and Asset Allocation
- KKR Technology & Innovation Team
- Senior Advisors
- Client and Partner Group

Complementing KKR's deep resources is its partnership approach to sourcing in Europe. A defining characteristic of the opportunities that the European private equity team has sourced over the last decade has been the significant proportion of partnership deals. Partnership deals to the KKR Europe team means transactions where the family/founder(s), corporate or prior investor has retained a meaningful stake in their business post KKR investment. The partnership philosophy is built on KKR's fundamental belief that it can be a provider of more than just capital, and that there are compelling reasons and benefits for a company to consider a partnership with the Firm.

Once KKR makes an investment, KKR and the portfolio company management team begin carrying out the plans laid out in the detailed 100-Day Plan. The 100-Day Plan assigns responsibilities to various managers and KKR professionals, as well as to KKR Capstone operational executives (when engaged), and delineates a clear set of action steps to achieve operational excellence and a company's strategic objectives. Specific areas of focus for deal teams, KKR Capstone, and other dedicated external partners include:

- Long-term revenue growth
- Upgrading and strengthening of business processes and operating metrics
- Portfolio management through M&A
- Support carve-out transactions
- Cost and efficiency improvements, including turnarounds
- Technology improvements
- Cross portfolio programs

By focusing on these components and others, KKR has been able to translate operational improvement into value creation for their portfolio companies and ultimately for their investors.

IV. Investment Performance

Previous fund performance as of December 31, 2018 is shown below:

Fund	**Vintage Year**	**Total Commitments**	**SBI Investment**	**Net IRR***	**Net MOIC***	**Net DPI***
KKR European Fund I	1999	$3.1 Billion	--	20.2%	2.3x	2.3x
KKR European Fund II	2005	$5.8 Billion	--	4.5%	1.3x	1.3x
KKR European Fund III	2008	$6.1 Billion	--	11.9%	1.7x	1.5x
KKR European Fund IV	2015	$3.5 Billion	--	18.7%	1.4x	0.2x

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

V. Investment Period and Term

The investment period for the Fund will be six years with a term of eleven years from the initial investment, subject to up to two additional one-year extensions.

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

This page intentionally left blank.

ATTACHMENT D

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Permira VII L.P.1
Type of Fund:	Private Equity – Buyout
Target Fund Size:	€10 billion
Fund Manager:	Permira VII G.P. L.P.
Manager Contact:	Jay Brupbacher 320 Park Avenue New York, NY 10022

II. Organization and Staff

Permira (the "Firm") has been engaging in growth buyout transactions for over thirty years. With its roots tracing back to country-specific funds in Europe beginning in 1985, Permira raised its first pan-European fund in 1997 and opened its first office in the United States in 2002. In addition, the Firm has been an active investor in Asia dating back to 2005. Today, there are 112 investment professionals located in 11 investing offices globally that operate as a matrix by combining local, sector, and functional expertise.

Permira has been led by Co-Managing Partners Kurt Björklund and Tom Lister since 2008. They are joined on the Investment Committee by Partners Jörg Rockenhäuser, Brian Ruder, Richard Sanders, and Benoit Vauchy, each of whom has been with Permira for over 10 years. As part of the 112 investment professionals, there is a core team of 8 internal operating specialists, the Portfolio Group, overseen by Kurt and Tom. This is a team of highly experienced operating professionals located in Europe, the U.S., and Asia. The individuals typically have either a strong sector affiliation or deep functional expertise.

III. Investment Strategy

Permira VII (the "Fund" or "P7") will seek to invest in market-leading businesses that benefit from strong and resilient underlying growth trends, identified through a proven sector thematic investment strategy. Through active and engaged ownership, applying a repeatable value creation toolkit, the Fund will seek to accelerate sustainable growth and drive major business transformation. Permira believes that the fund is well positioned to invest through both benign and challenging conditions because of its highly integrated sector and local office teams, intrinsic flexibility and spirit of enterprise, and strong sense of teamwork and collaboration.

The fund will take a broad approach across sectors and geographies to ensure that the capital will be deployed into the most attractive risk-adjusted opportunities at any point, with no pressure to invest in geographies or sectors that are at a less attractive stage in the cycle, and no pre-allocation of capital. Investment professionals are organized by the industry verticals in which Permira operates: Technology, Consumer, Industrials, Financial Services, and Healthcare. Recent years have seen a growing incidence of cross-sector initiatives, chiefly because the disruptive effects of technology now reach into almost every area of business. Permira believes that the flexibility and agility of its investment team positions the firm well to pursue opportunities that often fall between the focus areas of other, more rigidly structured organizations.

An ambition to drive very significant business transformation has long been a feature of Permira's investment philosophy. Permira has invested considerably into its dedicated Portfolio Group over the past decade to support the investment teams in delivering on growth initiatives. This has produced an increasingly systematized and effective set of value creation toolkits to drive repeatability, much more intensive engagement with the portfolio companies, more sophisticated performance tracking, and more effective knowledge sharing. Examples of value creation toolkits include pricing, channel management, procurement, IT, M&A and post-merger integration, and carve-out support. Note that Permira expects to build this team out further with additional hires globally over the coming year leading up to the activation of P7.

P7 will follow a robust and well-established investment process, characterized by a high level of integration and collaboration between the sectors, local offices, and functional groups. The investment process has been refined through multiple cycles, and is coordinated by a strong central Investment Committee process. Importantly, the investment team driving the origination of a deal maintains responsibility through to exit, with support throughout the investment lifecycle from dedicated internal specialists and expert external networks.

IV. *Investment Performance*

Previous fund performance as of December 31, 2018 is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR[2]	Net MOIC[2]	Net DPI[2]
Permira I	1997	€890 million	--	84%	2.5	2.5
Permira II	2000	€3,300 million	--	17%	1.7	1.7
Permira III	2003	€4,955 million	--	23%	1.7	1.7
Permira IV[1]	2006	€9,411 million	--	11%	1.8	1.7
Permira V	2014	€5,000 million	€150 million	17%	1.6	0.4
Permira VI	2016	€7,252 million	€120 million	11%	1.1	0.0

1. In December 2008, Permira IV was reorganized to meet the desire of certain investors to limit their capital commitments. The fund size here is for all investors but the returns are shown for Continuing Limited Partners ("CLPs") only (including investors that elected to increase their commitments during the reorganization) and reflect the benefit of reallocation amounts. Excluding the reallocation amounts, the Gross Realized Multiple is 2.0x, the Gross Realized IRR is 13%, the Gross Multiple over invested is 2.1x and Gross IRR for all deals is 13%; the DPI is 1.6x, TVPI is 1.8x and Net IRR is 10%.

2. Previous fund investments are not indicative of future results. Net IRR, Net MOIC, and Net DPI were provided by Permira.

V. Investment Period and Term

The fund will have a six-year investment period and a ten-year term, with the potential of three one-year extension periods.

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

This page intentionally left blank.

ATTACHMENT E

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	TPG Partners VIII, L.P.
Type of Fund:	Private Equity Limited Partnership
Total Fund Size:	$11 Billion (target)
Fund Manager:	TPG Capital / TPG GenPar VIII, L.P.
Manager Contact:	John Cosgrove 888 7th Avenue New York, NY 10106

II. Organization and Staff

Formed in 1993 by David Bonderman and James Coulter, TPG (the "Firm") is a global alternative investment firm with $104 billion in AUM. TPG Capital is the North American & European focused middle- and large- market private equity business of TPG. Since inception, TPG Capital has invested ~$57 billion in 196 investments, creating over ~$33 billion of gains on fully realized deals.

The TPG Capital team includes 96 dedicated professionals[1] and is led by Co-Managing Partners Todd Sisitsky and Jack Weingart with support from Firm Leadership (Co-CEOs Mr. Coulter and Jon Winkelried as well as CIO Jonathan Coslet and Mr. Bonderman as Chairman). Across the Firm, TPG has over 570 investment and operations professionals located in 17 offices across 16 cities worldwide – San Francisco, Fort Worth, New York, London, Hong Kong, Austin, Boston, Beijing, Dallas, Houston, Luxembourg, Melbourne, Moscow, Mumbai, Seoul and Singapore.

III. Investment Strategy

TPG Partners VIII, L.P. (the "Fund") is being formed to seek attractive returns by making investments in operating companies through acquisitions and restructurings. TPG believes that investors will benefit from the TPG Capital ecosystem, which has been developed over a long history of successful investing, and from a strategic focus centered around: 1) a sector-driven, thematic approach to sourcing, 2) value creation through operational improvement and 3) differentiated deal types.

TPG Capital seeks to invest in businesses that they identify as having one of the following attributes:

i. market leaders with a fundamentally strong business model in sectors in which TPG Capital has deep experience and strong conviction ("Traditional Buyouts"),

[1] Includes Field Ops professionals, who recently became full-time employees dedicated to TPG Capital.

ii. potential for transformative growth or improvement under TPG Capital's ownership ("Transformational" transactions), or

iii. attractive risk / reward profile despite being unconventional ("Off the Beaten Path" transactions).

In light of TPG Capital's hands-on and transformation-oriented investment style, portfolios typically skew more towards Transformational and Off-the-Beaten-Path transactions relative to peers. To date, TPG VII has invested 13% in Traditional Buyouts, 61% in Transformational Transactions and 26% in Off-the-Beaten-Path Transactions[2].

<u>Traditional Buyouts</u>

Traditional Buyouts have historically been comprised of well-managed companies that have strong business models within their industries. These companies typically enjoy leading brands and market share, strong underlying industry trends, and management teams with demonstrated track records. TPG Capital actively manages these investments, largely in the form of incremental efforts of the Firm's in-house operations group, TPG Operations Group ("TPG Ops"), and a focus on enhanced capital efficiency. TPG Capital often invests for growth in these businesses and works to accelerate management's existing strategy. As of December 2018, TPG Capital has executed 40 Traditional Buyouts investing ~$19 billion and generating a 1.9x Gross M-o-M[3] and a 13% Gross IRR on fully realized investments.

<u>Transformational Transactions</u>

Transformational transactions often involve a substantial degree of direct involvement from TPG Capital, both from deal teams and TPG Ops. Transformational transactions can be "broken-to-good" investments in turnaround situations and can also be "good-to-great" transactions where active involvement is required to increase revenue and earnings growth through a change in strategy or operations. As of December 2018, TPG Capital has executed 67 Transformational transactions investing ~$21 billion and generating a 2.5x Gross M-o-M[4] and a 34% Gross IRR on fully realized investments.

<u>Off-the-Beaten-Path Transactions</u>

Off-the-Beaten-Path transactions are those that are unconventional – either in the uncommon structure of the transaction or the sourcing efforts required to generate the investment opportunity. These are investments that TPG believes feature interesting risk / reward profiles that allow the Firm to unlock value that may be unavailable to other investors. As of December 2018, TPG Capital has executed 89 Off-the-Beaten-Path transactions investing $16 billion and generating a 2.2x Gross M-o-M[5] and a 36% Gross IRR on fully realized investments.

[2] This categorization is necessarily subjective and has been determined by TPG in its reasonable discretion. Percentages are based on the amount of capital invested.
[3] Recycle adjusted. Unadjusted Gross MoM on Traditional Buyout, fully realized deals is 1.7x.
[4] Recycle adjusted. Unadjusted Gross MoM on Transformational, fully realized deals in 2.3x.
[5] Recycle adjusted. Unadjusted Gross MoM on Off-the-Beaten-Path, fully realized deals in 2.0x.

TPG has invested in every major industry group, and TPG Capital is focused on investing in six core sectors: (1) Healthcare, (2) Technology, (3) Internet Digital Media & Communications ("IDMC"), (4) Consumer, (5) Industrials & Business Services, and (6) Energy. The core sectors of focus are key to generating top-down investment themes which TPG believes allow deal teams to proactively source differentiated investments, make thoughtful investment decisions based on industry knowledge, and remain efficient by quickly passing on unattractive opportunities.

IV. Investment Performance

Previous fund performance as of December 31, 2018 for investments in Air Partners through TPG VII is shown below:

Fund	Vintage Year	Total Commitments	SBI Commitment	Net IRR*	Net MOIC*[6]	Net DPI*
Air Partners	1993	$64 million	N/A	73%	8.9x	8.9x
TPG I	1994	$696 million	N/A	36%	3.7x	3.5x
TPG II	1997	$2.5 billion	N/A	10%	1.8x	1.7x
TPG III	1999	$3.7 billion	N/A	26%	2.8x	2.6x
TPG IV	2003	$6.2 billion	N/A	15%	2.1x	1.9x
TPG V	2006	$15.6 billion	N/A	5%	1.4x	1.3x
TPG VI	2008	$18.9 billion	N/A	11%	1.6x	1.2x
TPG VII	2015	$10.5 billion	$100 million	18%	1.3x	0.1x

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR, Net MOIC, and Net DPI were provided by TPG.

V. Investment Period and Term

The commitment period for the Fund is six years from the effective date (December 31, 2018). The fund term is ten years, which may be extended for up to two additional one-year periods with the consent of a majority interest 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.

[6] Recycle adjusted. Unadjusted Gross MoM for TPG I is 3.5x; TPG II is 1.7x; TPG III is 2.6x; TPG IV is 1.9x; and TPG VI is 1.5x.

This page intentionally left blank.

ATTACHMENT F

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Warburg Pincus China-Southeast Asia II
Type of Fund:	Private Equity - Growth
Target Fund Size:	$3.5 Billion
Fund Manager:	Warburg Pincus LLC
Manager Contact:	James W. Wilson 450 Lexington Ave. New York, NY 10017

II. Organization and Staff

Warburg Pincus ("the firm") was founded in 1966 and raised its first institutional fund in 1971. Warburg Pincus was founded in New York and remains headquartered there, but has a global presence with 10 additional offices around the world. All of the firm's investment activities are coordinated by a 16-person Executive Management Group led by the firm's Co-Chief Executive Officers - Charles R. Kaye and Joseph P. Landy. The members have an average tenure of 16 years with the firm and an average age of 52. In total the firm more than 550 employees, including 77 Managing Directors and more than 200 investment professionals.

Led by Charles R. Kaye, Warburg Pincus opened its office in Hong Kong in 1994, followed by Beijing in 2003, Shanghai in 2005, and Singapore in 2016. Since 2005, the firm has invested $10.3 billion across more than 96 China and Southeast Asia investments. The team responsible for investing capital in China and Southeast Asia is comprised of 12 Managing Directors and 38 other investment professionals based out of offices in Beijing, Hong Kong, Singapore and Shanghai. The 12 managing directors on the team have an average tenure with the firm of 11 years. The team is led by Co-Heads Julian Cheng, Jeffrey Pearlman and Frank Wei.

In addition to the firm's global funds, most recently Warburg Pincus Global Growth ("WPGG"), the firm has raised several companion funds that invest alongside WPGG in specific deals based on geography or sector. The companion funds help maintain the desired diversification of the WPGG and future global funds, and offer investors the option to increase exposure in certain areas. Warburg Pincus China-Southeast Asia II ("WPC-SEA II") will be invested alongside the WPGG in all China and Southeast Asia deals. Most investments in companies, businesses or projects with significant connections and exposure to China or Southeast Asia will be shared 50-50 between the two funds. Financial sector related investments will be split 40-40-20 between WPGG, WPC-SEA II and Warburg Pincus Financial Sector Fund, respectively.

III. Investment Strategy

The Warburg Pincus investment strategy in China and Southeast Asia is to identify what the firm believes to be are best-in-class entrepreneurs and businesses in rapidly growing areas of the economy that the firm believes can benefit from the ongoing economic and structural transformations occurring in the region. The China and Southeast Asia Team tends to focus on sectors that it believes are capable of continuing to deliver 15% to 25% annual top-line growth rates, even in times of lower overall gross domestic product growth. These include areas such as healthcare, logistics, e-commerce, technology, consumer, retail, businesses focused on environmental improvements and protections, and real estate development platforms.

The firm believes that WPC-SEA II is well-positioned to benefit from trends in China including a continued increase in domestic consumption, an aging population, a growing need for modern infrastructure, and the expanding penetration of technology and the Internet. In Southeast Asia, the firm believes WPC-SEA II is well-positioned to invest behind a similar set of macroeconomic trends, including increased urbanization, a young population with an emerging middle class and the rapid adoption of new technologies and platforms.

The China Team is organized into five industry verticals:

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

Warburg Pincus develops thesis-driven strategies informed by deep sector knowledge and experience and its proprietary research and network. In addition to a core focus on backing talented management teams, the firm's broader investment strategy hinges on the development of specific industry theses and combining the right management teams with these theses to create successful portfolio companies. The China and Southeast Asia Team's thesis focuses on seeking to identify attractive themes for investments, sometimes even before the team has identified a management team or specific opportunity related to those themes.

Warburg Pincus has an established track record in China, having invested with and alongside leading management teams that have built businesses to capture the upside generated from shifts in the macroeconomic landscape. The firm has invested in TMT behind the rapid evolution and adoption of mobile and Internet technologies, and has seen the benefits of this trend extend into other sectors in which it focuses, such as Healthcare, Consumer & Services and Financial Services. Increased spending on pharmaceuticals, private healthcare, medical devices and medical services driven by an aging population, together with a rise in household spending, has led Warburg Pincus to invest in pharmaceuticals and specialized hospitals and healthcare providers. China's financial services sector is being reshaped by a number of ongoing reforms and innovations, driving Warburg Pincus' investment in this area. Warburg Pincus has invested behind China's shift to a consumption-based economy, focusing on niche asset classes including residential rental apartments, specialized retail, parking and data centers.

Since the firm's first Southeast Asia investment in 2013, Warburg Pincus has developed what it believes to be a successful investment strategy in three core countries in the region—Vietnam, Indonesia and Singapore—across the TMT and Financial Services sectors, as well as in Real Estate. In Real Estate, Warburg Pincus' thesis is similar to that in China: investing behind the emerging consumption trend and focusing on the commercial, hospitality and other specialized real estate sub-sectors. The firm believes that the proliferation of smartphones across Southeast Asia has created a plethora of investment opportunities in e-commerce marketplaces, financial technology platforms and other TMT businesses. The firm believes that the Financial Services sector presents significant opportunity for growth and expansion, with low penetration of bank accounts, credit cards, insurance and other key financial products across the region to date. While the firm believes the opportunities in Southeast Asia are attractive, WPC-SEA II is primarily a China-focused fund with less than 25% of aggregate fund commitments to be invested in Southeast Asia.

IV. *Investment Performance*

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
EMW Ventures Inc.	1971	$41 million	-	14.9%	3.3x	3.3
Warburg Pincus Associates	1980	$101 million	-	19.0%	3.3x	3.3
Warburg Pincus Capital Partners	1983	$341 million	-	14.6%	2.8x	2.8
Warburg Pincus Capital Company	1986	$1.2 billion	-	18.4%	4.4x	4.4
Warburg Pincus Investors	1989	$1.8 billion	-	14.8%	2.4x	2.4
Warburg Pincus Ventures	1994	$2 billion	$50 million	49.5%	5.2x	5.2
Warburg Pincus Ventures International	1997	$800 million	-	11.0%	1.9x	1.9
Warburg Pincus Equity Partners	1998	$5 billion	$100 million	10.3%	1.7x	1.7
Warburg Pincus International Partners	2000	$2.5 billion	-	10.4%	1.9x	1.8
Warburg Pincus VIII	2001	$5.3 billion	$100 million	14.6%	2.3x	2.2
Warburg Pincus IX	2005	$8 billion	$100 million	9.8%	1.7x	1.7
Warburg Pincus X	2007	$15.1 billion	$150 million	8.0%	1.6x	1.2
Warburg Pincus XI	2012	$11.2 billion	$200 million	14.1%	1.6x	0.6
Warburg Pincus Energy	2014	$4 billion	-	9.5%	1.2x	0.1
Warburg Pincus XII	2015	$13.4 billion	$131 million	11.9%	1.2x	0.1
Warburg Pincus China	2016	$2.2 billion	$45 million	22.5%	1.2x	0.0
Warburg Pincus Financial Sector	2017	$2.5 billion	$90 million	-23.9%	0.8x	0.0
Warburg Pincus Global Growth	2019	$14.5 billion	$250 million	N/A	N/A	N/A

* 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 are provided by the manager as of 12-31-18.

V. Investment Period and Term

The Partnership's investment period will be six years and the Partnership's term will be twelve years subject two years of extension 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 G

PRIVATE CREDIT MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	LBC Credit Partners V, L.P.
Type of Fund:	Direct Lending
Total Fund Size:	$1 billion
Fund Manager:	LBC Credit Management
Manager Contact:	Nevin Murkley 555 East Lancaster Avenue, Suite 450 Radnor, PA 19087

II. Organization and Staff

LBC was co-founded by its current partners, John Brignola and Nathaniel Cohen, and other individuals including Ira Lubert in 2005. The firm has raised over $2.9 billion of total committed capital through four fund platforms.

LBC is headquartered in the suburbs of Philadelphia with offices in Chicago, Los Angeles and New York. The offices are staffed by senior investment professionals, with an average of over 21 years of experience at the Vice President level and above. The investment committee consists of Allan Allweiss, John Brignola, Homyar Choksi, Nate Cohen, David Fraimow, Michael Hertz and John Jadach, and works in conjunction with other senior investment professionals of the firm all of whom have direct experience and a collective track record of origination and managing loans. Senior investment professionals are supported by a team of research analysts, underwriters and portfolio managers and a sophisticated technology platform which enables the management of deal flow, research, underwriting, portfolio servicing, finance and accounting and investor relations.

III. Investment Strategy

LBC seeks to maximize current return while preserving Limited Partners' capital primarily by directly originating and managing a diversified portfolio of senior loans to middle market companies. LBC defines middle market companies as those with revenues of typically less than $750 million and EBITDA of $5 billion to $50 million. Fund V will structure loans with maturities ranging generally from three to seven years. However, LBC anticipates that average actual loan life will approximate three years due to principal reductions in the form of amortization, cash flow sweeps and early full repayments. Typical investments will likely range in size between $20 million and $50 million.

Fund V intends to manage risk by making investments in private loan transactions across a broad range of industry sectors. Fund V expects to invest throughout the capital structure with a primary focus on senior loans based on comprehensive credit evaluations targeting appropriate risk-adjusted returns. LBC's ability to offer senior and junior capital across various industries allows Fund V to expand its base of deal flow, counter the effect of business cyclicality, minimize the effects of adverse risk selection and provide portfolio diversification.

Typical investments are expected to be corporate loans possessing a senior lien on all or specific assets of a borrower or a junior lien on all assets of the borrower. The primary types of loans are cash flow, uni-tranche, bifurcated term, second lien, secured mezzanine.

Fund V will be built with the goal of providing investors with current income and a targeted total net IRR of 11% to 13% after taking into account all fees, carried interest and expenses. Fund V will seek to minimize exposure to interest rate fluctuations through floating rate structures tied to market base rates.

Experienced Management

LBC has assembled a management team with extensive experience in all aspects of middle market direct lending consistent with Fund V's strategy. From the vice president level and higher, the average years of experience exceeds twenty-one and average tenure with LBC is more than seven years. LBC employs an investment staff of over 45 individuals dedicated to the strategy.

Distinguished Features

For more than fourteen years, LBC has demonstrated the ability to deploy capital on a consistent basis through selective portfolio growth by lending to companies in the U.S. lower middle market. LBC has built a platform to execute a direct lending strategy with the following attributes:

- Fifteen years of investing
- Sole investment strategy in U.S. middle market direct lending;
- Highly experienced investment team;
- Selective thesis-driven industry overweighting's;
- Investment approvals designed to elicit diversity of opinion and independence; and
- Standardized investment process applied repetitively from fund to fund.

IV. *Investment Performance*

Previous fund performance as of December 31, 2018 for is shown below:

Fund	Vintage Year	Total Commitments	SBI Commitment	Net IRR*	Net MOIC*	Net DPI*
LBC Credit Partners I	2005	$300 million		11.4	1.44	
LBC Credit Partners II	2008	$642 million		14.7	1.34	
LBC Credit Partners III	2013	$839 million		10.1	1.23	0.86
LBC Credit Partners IV	2016	$744 million	$100 million	12.4	1.12	0.19

* Previous fund investments are not indicative of future results. Net IRR and Net MOIC were provided by LBC.

V. *Investment Period and Term*

The commitment period will be three years from the final close, subject to extension of up to six months. The term will be 8 years from final close, subject to two one-year extensions.

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

This page intentionally left blank.

ATTACHMENT H

RESOURCE MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	The Energy & Minerals Group Fund V
Type of Fund:	Resource Limited Partnership
Target Fund Size:	$2.5 billion + $1.0 billion ("the Accordion")
Fund Manager:	The Energy & Minerals Group
Manager Contact:	Alexandra Holzer 229 San Felipe St., Suite 1300 Houston, TX 77019

II. Organization and Staff

The Energy and Minerals Group ("EMG" or the "Firm") is raising The Energy & Minerals Group Fund V, LP ("EMG V" or "Fund V") and The Energy & Minerals Group Fund V Accordion, LP ("the Accordion") to invest in the natural resource industry, which includes the entire energy complex, and all facets of the minerals and metals industry. EMG will place a particular emphasis on non-substitutable, industrial commodities. The Accordion is a lower management fee companion fund that will invest alongside Fund V in the largest deals.

In 2006 co-founders John T. Raymond and John G. Calvert formed a joint venture with Natural Gas Partners (NGP) to assist in fund-raising efforts for Fund I. In 2009, EMG was formed by the co-founders to manage all investment activities of Fund I and all subsequent funds. In addition to the two co-founders, Lee R. Raymond, retired CEO of ExxonMobil also sits on the investment committee for the fund. The three members of the investment committee have extensive operating, leadership and investment experience in a variety of natural resources industries. The firm has 14 investment professionals, an investor relations professional and a 15-person tax, finance, reporting and administrative support team. Since inception, EMG has raised and managed nearly $16.3 billion in capital commitments. The Firm operates out of offices in Houston and Dallas, TX.

III. Investment Strategy

Consistent with past funds, EMG V will seek to generate what it believes to be the most attractive risk-adjusted returns across the natural resources industry by following an investment strategy with "three dimensional" diversity across geography, commodity and business function, which allows the Firm to adapt to the ever-changing investment landscape.

As a focused investor with a global network of relationships and capability to pursue opportunities in multiple jurisdictions, EMG has successfully executed transactions in the United States, Canada, South Africa, the United Kingdom and Australia. The Firm only invests in jurisdictions that have a historical precedent of rule of law and historical operating practices; this has manifested itself in EMG's track record of investing in the five aforementioned countries with the significant majority of capital being invested in North America.

The Firm seeks to generate real alpha via a focus on investment opportunities grounded in hard assets that are integral to existing and growing markets. EMG has expertise across the entire value chain of the energy sector as well as the steel industry inputs, base metals and battery raw material inputs that enables it to understand current sub-sector dynamics and prudently identify areas of opportunity. Within these commodities, EMG invests primarily in the upstream business function, and the midstream business function. EMG is not focused on one sub-sector of the industry in one region, and therefore can allocate capital to what the Firm believes are the most attractive risk-adjusted opportunities across the broader energy and natural resource industries in the countries identified above.

EMG believes that the intrinsic value of any natural resource-based investment is grounded in the underlying reserve quality. As such, when making an investment in upstream/extractive projects or midstream/infrastructure projects, EMG makes a deliberate and concerted effort to understand the science associated with the resource only after which a responsible business decision can be made. EMG believes that high-quality resources are critical in mitigating downside risk.

In order to execute on the Firm's broad mandate, EMG has a consistent investment thesis and approach. Specifically, the Firm seeks to identify investments that comply with each of the following three key tenets:

1. ***Low-cost sources of supply and/or production:*** EMG believes businesses with low-cost sources of supply and/or production, either direct or underlying, will be able to compete effectively on a through-cycle basis;
2. ***High-quality commodity-based products:*** The Firm targets companies with high-quality products that in turn receive premium values, either direct or derivatives thereof, in order to maximize margins and achieve superior profitability; and
3. ***Strategic proximal locations:*** EMG seeks to ensure the geographic position of its investments are in strategic proximal location relative to their direct end user(s) or key export points in order to deliver the respective products to market on a cost competitive basis.

The Firm believes that businesses built on these tenets are able to withstand commodity price cycles. EMG's underwriting of opportunities reflects this belief, and focuses on the durability of margins, rather than speculation on commodity prices. While high or rising commodity prices generally benefit EMG's investments, the Firm is focused on investment opportunities with hard assets that are integral to existing and growing markets, and do not rely on high commodity prices to generate returns.

IV. *Investment Performance*

The historical investment performance of EMG as of December 31, 2018 is presented below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
NGP Midstream & Resources (EMG Fund I)	2007	$1.4 billion	$100 million	13.8%	1.8	1.3
The Energy & Minerals Group Fund II	2011	$2.3 billion	$100 million	15.7%	1.9	0.7
The Energy & Minerals Group Fund III	2014	$4.1 billion	$200 million	-4.2%	0.9	0.1
The Energy & Minerals Group Fund IV	2015	$2.4 billion	$150 million	22.2%	1.4	0.2

* 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) provided by EMG.

X. *Investment Period and Term*

The investment period begins at the initial closing and continues until 5 years after the final close unless terminated sooner. The Fund term is 10 years, subject to two one-year extensions.

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

This page intentionally left blank.

TAB E

Investment Advisory Council Report

Public Markets, Non-Retirement, and Participant Directed Investment Programs

This page intentionally left blank.

DATE: May 23, 2019

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:

This page intentionally left blank.

Review of SBI Public Markets Program
First Quarter 2019

SBI Portfolio - Quarter and Year Attribution

In the first quarter, the SBI's overall portfolio, the Combined Funds, outperformed the composite benchmark return (8.4% Combined Funds versus 8.3% Composite Benchmark). Domestic equities outperformed the Russell 3000 Index return (14.2% Domestic Equity versus 14.1% Domestic Equity Benchmark), while international equities outperformed the MSCI ACWI ex USA Index (net) return (10.5% International Equity versus 10.3% International Equity Benchmark). The core fixed income portfolio outperformed the Bloomberg Barclays U.S. Aggregate Index return (3.4 % Fixed Income versus 2.9% Fixed Income Benchmark) and the Treasury portfolio, at a 3.4% return, matched the Bloomberg Barclays Treasury 5+ Year Index of 3.3%. Lastly, private markets, subject to a one quarter valuation lag, contributed negatively to the absolute return, returning -0.60% for the quarter.

For the quarter, public equities (domestic and international) contributed 8.2% of the combined funds 8.4% return, given the asset group's 63% allocation and quarterly return of 13.1%. For the year ending March 31, public equities contributed 2.7% of the combined funds 5.2% return, with a one year return of 4.2% for the asset group. Private Markets contributed 1.5% of the 5.2% total, given a 15% allocation and one year return of 9.9%.

Domestic Equity

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

The large cap value managers underperformed the Russell 1000 Value benchmark by 0.4 percentage point for the quarter. Overall stock selection was mixed, with stock selection in Health Care the largest detractor. Earnest outperformed and two managers trailed the quarterly benchmark.

The small cap growth managers trailed the Russell 2000 Growth benchmark by 1.3 percentage points for the quarter. Stock selection detracted from performance, led by the Health Care sector. Two managers outperformed for the quarter and two underperformed.

The small cap value managers exceeded the Russell 2000 Value benchmark by 0.1 percentage point for the quarter. Overall stock selection was positive for the quarter, led by the Consumer Discretionary sector. Two managers outperformed for the quarter and two underperformed.

For the quarter, the semi-passive managers in aggregate underperformed the Russell 1000 index return by 0.4 percentage point. Stock selection overall contributed negatively, especially in the Financial Services and the Producer Durables sectors.

The passive Russell 3000, Russell 1000, and Russell 2000 index managers tracked their respective indices within expectation.

Developed International Equity
Developed international stocks earned positive returns for the quarter, second only to SBI Domestic Equities, as strong corporate earnings continue to support global equity markets, while uncertainty surrounding the European Union and Brexit weighed somewhat on returns. The active developed markets managers outperformed the MSCI World ex USA Standard Index (net) by 0.9% over the quarter. Developed markets currencies were relatively stable vs. the US Dollar for the quarter, with most positive attribution being derived from security selection. From a country perspective, stock selection in Japan and Germany contributed to the outperformance. Among sectors, stock selection in both the Financials and Information Technology sectors also contributed to positive relative returns.

The Semi-Passive Developed Markets Manager, AQR, outperformed the MSCI World ex USA Standard Index (net) during the quarter. Stock selection in the Materials, Communication Services sectors as well as an underweight position in the Financials sector contributed positively to performance. Stock selection overall in Japan was also positive.

Both the passive developed markets manager and the passive emerging markets manager tracked their respective indices within expectation.

Emerging Markets Equity
Emerging markets equities (EME) rebounded from a difficult fourth quarter, with the active EME program returning 9.9% to start the year. As an asset class, emerging markets tend to be sensitive to global trade factors as well as movements in U.S. interest rates. Both these factors were beneficial to EME in Q1, as trade tensions between U.S. and China eased, and the U.S. Federal Reserve signaled a pause in further rate increases through 2019. On a relative basis, the active program matched its benchmark as active emerging markets equity composite returned 9.9%, equaling the MSCI EM benchmark return. Four managers in the active program outperformed while three managers underperformed. The overall emerging markets equity program, including passive, also matched the benchmark return of 9.9% over the same period. Growth and large cap styles returned to favor in EM this quarter, with managers exposed to China and Technology outperforming managers with small cap or value oriented styles. Stock selection in Korea, Taiwan and India contributed to relative returns, offset by negative sector (under) allocation to China. From a sector point of view, positive stock selection in Information Technology and Consumer Staples were the primary contributors to performance, offset by under allocation to Consumer Discretionary, particularly Internet and Retail sub-sectors.

Fixed Income – Core
All four active SBI fixed income managers supporting the core fixed income pool outperformed the Bloomberg Barclays Aggregate benchmark this quarter. In total, the active managers returned 3.6% vs. 2.9% for the benchmark. The three semi-passive managers' combined performance also outperformed the benchmark 3.2% vs. 2.9% for the benchmark. Yields fell (prices rose) across the curve for a second consecutive quarter, largely supported by a dovish FOMC, which announced no rate hikes at either the January or March meeting in addition to guidance of no planned rate increases for the remainder of 2019, citing a gradual slowdown of global growth. Core Fixed Income further benefited from a rally in essentially all other spread sectors. Corporate bond spreads, as measured by USD IG OAS, narrowed from 150 bps to 125 bps during the quarter in

correlation with strong equity risk assets. Most of SBI's bond managers are positioned modestly underweight rates and overweight other sectors, which, when supported by positive security selection, generally led to outperformance in the first quarter. Sector allocation to CMBS, non-agency MBS and High Yield, in particular, added to relative outperformance.

Fixed Income – Protection Portfolio

For the first quarter, the three managers responsible for the Protection Portfolio mandate (Goldman Sachs, BlackRock and Neuberger Berman) outperformed the Bloomberg Barclays Treasury 5+ Year Index, returning 3.4% versus 3.3% for the benchmark. On a relative basis, slightly underweight Treasury allocations combined with spread tightening of longer dated U.S. Agency securities contributed to the outperformance. Since inception, this sector positioning has resulted in the most consistent source of relative outperformance, with duration/curve positioning and TIPS strategies generating mixed results.

Public Markets Managers' Organizational Update
First Quarter 2019

Domestic Equity Managers

J.P. Morgan
During the quarter, Mathew Rand, who was covering REITs, left the firm. His coverage was assumed by Jason Ko, who has been with J.P. Morgan since 2002, and Ethan Alderman, who has been with J.P. Morgan since 2014. Mr. Ko previously covered REITs with J.P. Morgan's Active Equity Group and Ethan Alderman previously covered packaged food, beverages, household products, homebuilders and building products with J.P. Morgan's Large Cap Core funds.

BlackRock
During the quarter, Blackrock announced a number of leadership changes to several areas within the firm, including Client Businesses, Alternatives, Trading & Liquidity Strategies, and Unconstrained Investing. None of the leadership changes announced are specific to the portfolio management of the publically-traded equity strategies BlackRock manages on behalf of the SBI.

Developed International Equity Managers

AQR
As of January 2019, AQR's ownership expanded to include six new principals. In February 2019, Ryan Rampersaud joined AQR as Head of Client Solutions and Mohamed Abdel-Halim joined AQR as Head of Middle East Business Development.

State Street Global Advisors (SSgA)
In January 2019, Phil Gillespie, General Counsel for SSgA, announced his retirement. Kate McKinley, Chief Operating Officer of SSgA's Americas Institutional Client Group, will assume the role of General Counsel. Ralph Layman, Vice Chairman of SSgA, who played a key role in the integration of GE Asset Management following its acquisition in 2016 by SSgA, retired from the firm. In February 2019, Chris Rice, Global Head of Trading left SSgA to pursue new opportunities.

Marathon
Simon Todd, Portfolio Manager, left Marathon in February. Simon had been with Marathon for five years and co-managed a sleeve of the global equity portfolio and also co-managed part of the Japan investments in International mandates. He will be on gardening leave until August 2019. Simon co-managed with Michael Nickson, who will now assume sole responsibility for the assets. Staff will continue to monitor.

McKinley
Denali Kemppel, Chief Operations Officer, left McKinley in March 2019 to pursue other opportunities. In the interim, J.L. McCarrey, III, will assume the COO role. Mr. McCarrey serves as the firm's Senior Vice President and General Counsel and has been with McKinley since 1998. Staff will continue to monitor.

Emerging Market Equity Managers

Martin Currie
Effective March 1st, Willie Watt, Chief Executive Officer of Martin Currie, retired and was replaced with Julian Ide, who was Head of Distribution and Strategy and a member of the Board of Directors. Prior to joining the firm in May 2018, Julian had prior CEO experience at Source and Old Mutual Global Investors. Also in 2019, Legg Mason, Martin Currie's parent company launched a Global Business Platform initiative, aimed at consolidation of the legal, compliance and information technology resources of its underlying companies. Staff will monitor but has no immediate concerns with these changes, as they are independent of the investment management function.

Fixed Income Managers

Goldman Sachs
Effective March 2019, Jonathan Beinner retired from the firm and was replaced with Andrew Wilson as head of GSAM Global Fixed Income & Liquidity Solutions. Sam Finkelstein and Ashish Shah are now Co-CIO's for Global Fixed Income, and Ashish Shah has become head of the Cross Sector Team, effective January 2019. The Cross Sector team plays an important role in many GSAM Fixed Income strategies, and staff will follow and evaluate Ashish's leadership of this team closely.

BlackRock
In early April, BlackRock announced several organization changes relating to client business, Alternatives, Trading and Liquidity Strategies, and Unconstrained Investing. Effective April 2019, Rick Reider, CIO for Global Fixed Income, will assume leadership of BlackRock's Global Allocation (unconstrained) strategy. Rick will continue as CIO and retain his current portfolio management responsibilities, however he will be used as an investor resource for Global Allocation. To allow for this capacity, BlackRock is naming Bob Miller to become Head of Americas Fundamental Fixed Income, reporting directly to Rick. Staff has no concerns with these leadership changes, primarily as our fixed income mandates are outside of Global Allocation.

2019 Manager Meetings

The first quarter manager reviews are noted below.

Investment Manager	Asset Class
• AQR Capital Management, LLC	International Equity
• Barrow, Hanley, Mewhinney & Strauss, LLC	Domestic Equity
• BlackRock Financial Management, Inc.	Fixed Income
• Earnest Partners, LLC	Domestic Equity
• Goldman Sachs Asset Management	Fixed Income
• LSV Asset Management	Domestic Equity
• Macquarie Investment Management Advisers	International Equity
• Martin Currie Inc.	International Equity
• Mellon Corporation	Non-Retirement Equity
• Morgan Stanley Investment Management Inc.	International Equity
• Neuberger Berman Investment Advisers LLC	Fixed Income
• Neuberger Berman Investment Advisers LLC	International Equity
• Pacific Investment Management Company LLC (PIMCO)	Fixed Income
• Peregrine Capital Management	Domestic Equity
• Prudential Global Investment Management	Fixed Income
• Pzena Investment Management, LLC	International Equity
• Western Asset Management Company	Fixed Income
• Winslow Capital Management, LLC	Domestic Equity

Non-Retirement Manager Update
First Quarter 2019

Fixed Income

RBC Global Asset Management
The fixed income portfolio return of 1.6% slightly outperformed the Barclays Intermediate Government Index return for the quarter. The portfolio benefited from yield curve positioning combined with an overweight to U.S. Agency bonds and Agency Mortgage Backed Securities (MBS) which appreciated relative to Treasuries during the quarter.

Prudential Fixed Income
The fixed income portfolio return of 3.4% for the quarter outperformed the benchmark return, the Bloomberg Barclays U.S. Aggregate by 46 basis points. The portfolio's sector allocation to Investment Grade corporate, CMBS, ABS, Municipals and Emerging Markets sectors almost entirely drove the outperformance, as spreads tightened across most sectors during the quarter. The performance was partially offset by underweight positioning to MBS/CMO mortgage sectors, which also exceeded Treasuries return during the quarter.

Equity

BNY Mellon
Mellon tracked the benchmark for the quarter.

Deferred Compensation Manager Update
First Quarter 2019

Domestic Equities

Vanguard Dividend Growth Fund

The Fund returned 13.8% for the quarter, which outperformed its benchmark, the NASDAQ US Dividend Achievers Select Index return of 12.5%. Positive security selection in Health Care and Consumer Staples and an underweight allocation in Consumer Staples boosted results, as did an overweight allocation to Real Estate.

Vanguard Institutional Index Plus

The domestic equity portfolio outperformed the return of the S&P 500 Index for the quarter with a 13.7% return versus a 13.6% return for the benchmark.

Vanguard Mid-Cap Index

The mid-cap equity portfolio tracked the benchmark, CRSP US Mid Cap Index, for the quarter with a 16.8% return.

T. Rowe Price

The small cap equity portfolio outperformed the Russell 2000 for the quarter with a 17.6% return versus the benchmark return of 14.6%. Relative performance for the quarter benefited from stock selection in Information Technology and Health Care.

International Equities

Fidelity Diversified International

The international equity portfolio returned 11.2% for the quarter, which outperformed the MSCI EAFE Free benchmark return of 10.0%. Stock selection relative to the benchmark in Financials, Communication Services and Information Technology benefited returns. Regionally, a non-index allocation in U.S and emerging market holdings boosted relative performance, as did positions in Japan and Canada.

Vanguard Total International Stock Index

The international equity portfolio outperformed the benchmark, the FTSE Global All Cap ex US Index, for the quarter with a 10.3% return versus the benchmark return of 10.2%. 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 3.7% return versus the benchmark return of 2.9%. Relative performance benefited from an overweight to corporate bonds and underweight to U.S. Treasuries. Security selection within credit was also additive to relative performance.

Vanguard Total Bond Market Index
The fixed income portfolio matched the benchmark, the Bloomberg Barclays Aggregate Index, for the quarter with a 2.9% 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 9.6%, which tracked the customized benchmark return 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 underperformed the benchmark, the 3-Year Constant Maturity Treasury plus 0.45%, for the quarter with a 0.6% return versus the benchmark return of 0.7%. An underweight allocation to foreign sovereign debt issues detracted from returns.

State Street Global Advisors
The money market fund returned 0.7% for the quarter compared to the 90 Day T-Bill return of 0.6%.

This page intentionally left blank.

TAB F

Report

AON Market Environment Report

This page intentionally left blank.

Market Environment

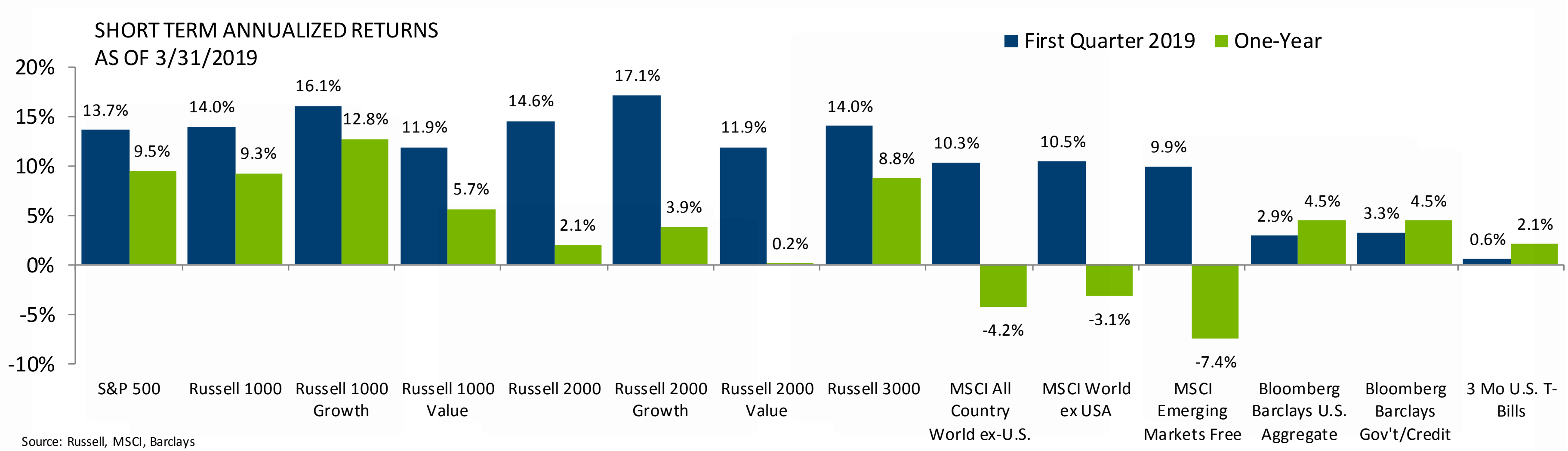
First Quarter 2019

Aon

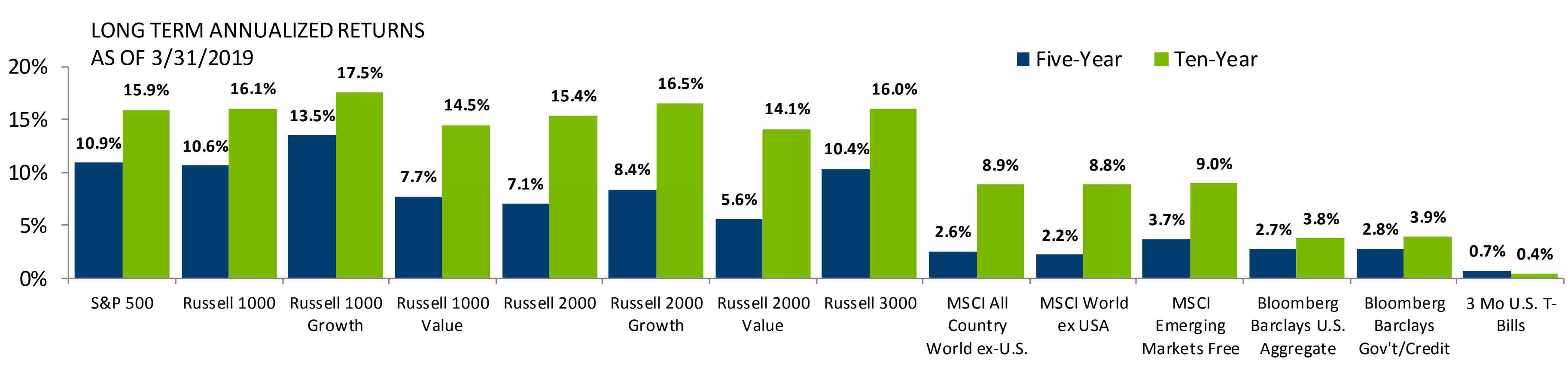
Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.

Empower Results®

Market Highlights



Source: Russell, MSCI, Barclays



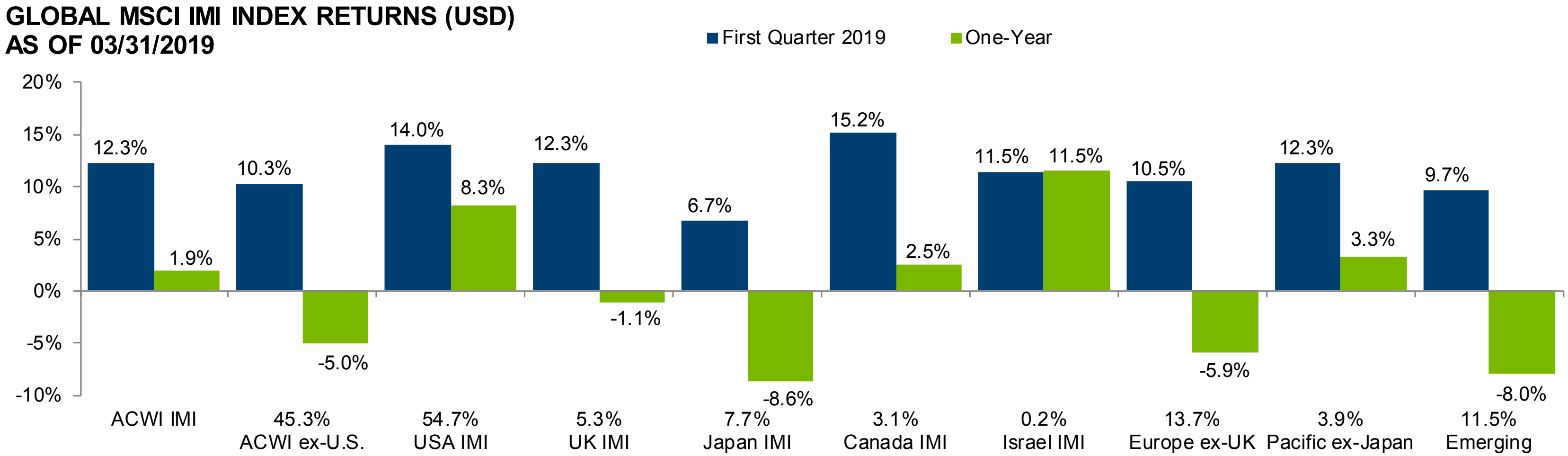
Source: Russell, MSCI, Barclays

Market Highlights

Returns of the Major Capital Markets					
					Periods Ending 3/31/2019
	First Quarter	1-Year	3-Year[1]	5-Year[1]	10-Year[1]
Domestic Equity					
S&P 500	13.7%	9.5%	13.5%	10.9%	15.9%
Russell 1000	14.0%	9.3%	13.5%	10.6%	16.1%
Russell 1000 Growth	16.1%	12.8%	16.5%	13.5%	17.5%
Russell 1000 Value	11.9%	5.7%	10.5%	7.7%	14.5%
Russell 2000	14.6%	2.1%	12.9%	7.1%	15.4%
Russell 2000 Growth	17.1%	3.9%	14.9%	8.4%	16.5%
Russell 2000 Value	11.9%	0.2%	10.9%	5.6%	14.1%
Russell 3000	14.0%	8.8%	13.5%	10.4%	16.0%
International Equity					
MSCI All Country World ex-U.S.	10.3%	-4.2%	8.1%	2.6%	8.9%
MSCI World ex USA	10.5%	-3.1%	7.3%	2.2%	8.8%
MSCI Emerging Markets Free	9.9%	-7.4%	10.7%	3.7%	9.0%
Fixed Income					
Bloomberg Barclays U.S. Aggregate	2.9%	4.5%	2.0%	2.7%	3.8%
Bloomberg Barclays Gov't/Credit	3.3%	4.5%	2.1%	2.8%	3.9%
3 Mo U.S. T-Bills	0.6%	2.1%	1.2%	0.7%	0.4%
Inflation					
CPI-U	0.6%	1.9%	2.2%	1.5%	1.8%

MSCI Indices show net returns.
All other indices show total returns.
[1] Periods are annualized.

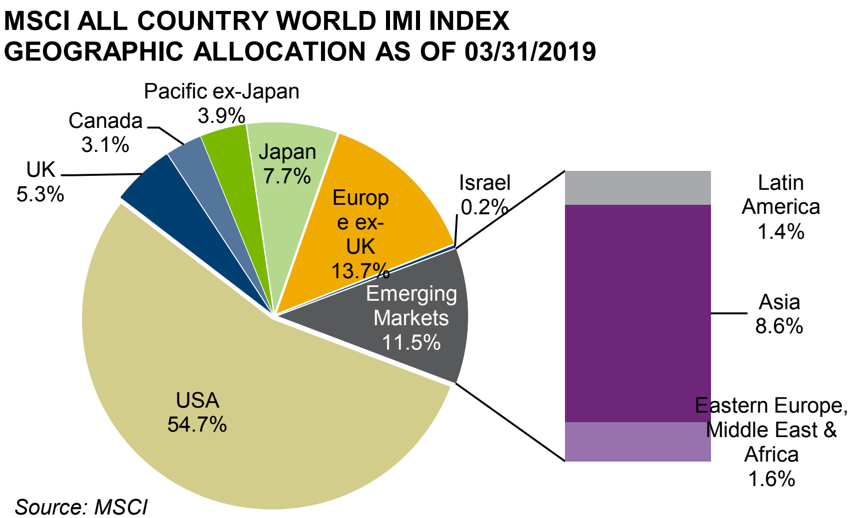
Global Equity Markets

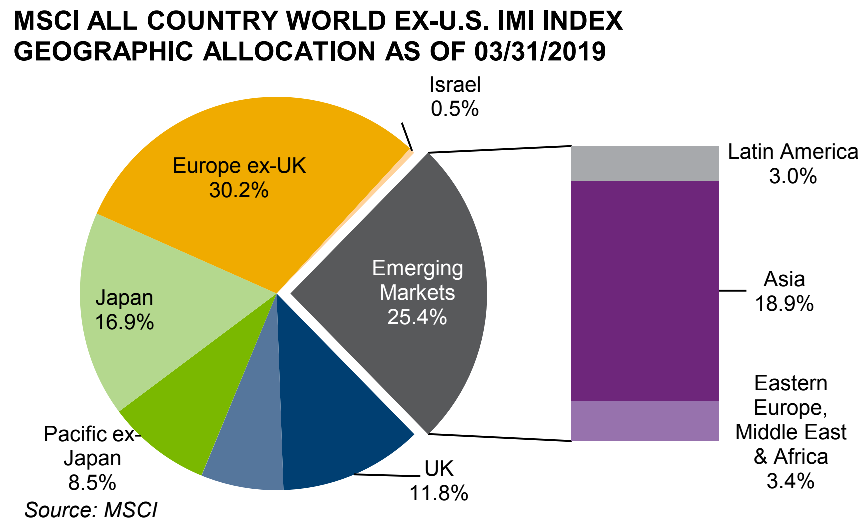


Source: MSCI

- Concerns of slowing global growth and trade wars partially eased in the first quarter of 2019, bolstering global equities in the process. In local currency terms, the MSCI AC World Investable Market Index returned 12.3% – not quite fully offsetting the previous quarter's decline.
- Rising oil prices and encouraging performance from Canadian Financials and Energy, combined with a strengthening of the Canadian dollar against the U.S. dollar resulted in the Canadian equity market being the strongest performer (USD terms) over the quarter.
- Japanese and European (ex-UK) equities were predominantly boosted by valuation multiple expansion. This came despite deteriorating economic dataflow, with Japanese and eurozone PMIs moving into contractionary territory, weak industrial production and falling inflation.
- Strong sterling performance over the quarter on the back of increased possibility of a “no deal” Brexit scenario boosted UK equity market returns in USD terms. In local currency terms, however, UK equities largely lagged other markets.

Global Equity Markets

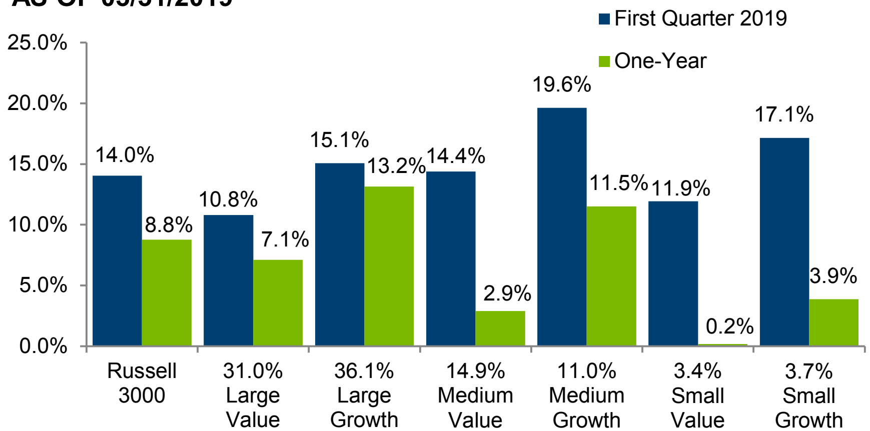




- The two exhibits on this slide illustrate the percentage that each country/region represents of the global and international equity markets as measured by the MSCI All Country World IMI Index and the MSCI All Country World ex-U.S. IMI Index, respectively.

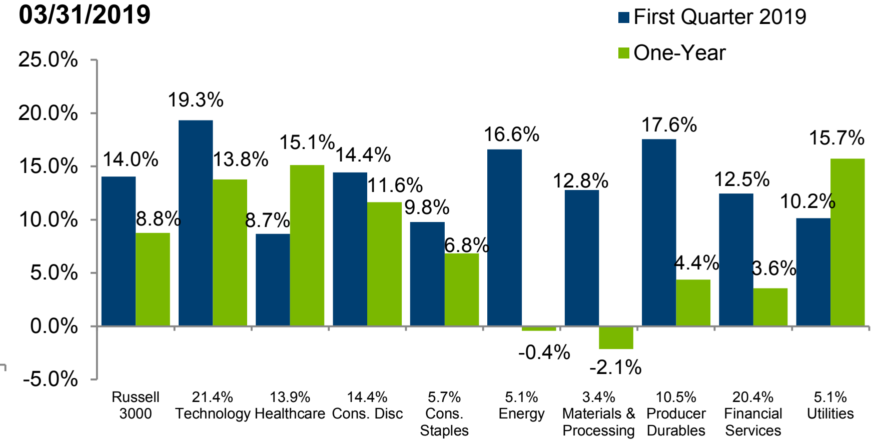
U.S. Equity Markets

RUSSELL STYLE RETURNS AS OF 03/31/2019



Source: Russell Indexes

RUSSELL GICS SECTOR RETURNS AS AT 03/31/2019

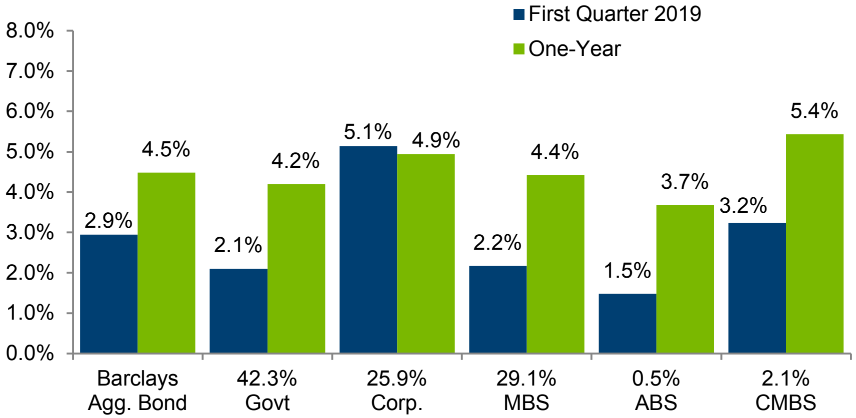


Source: Russell Indexes

- With concerns of a slower U.S. economy abating and more promising steps to some U.S.-China trade reconciliation, it is unsurprising that drivers of the U.S. equity market upturn came from sectors traditionally thought to be cyclical or, at least, sensitive to the economic environment. The Dow Jones Total Stock Market Index rose by 14.0% over the quarter with the majority of the strong performance coming earlier in the quarter. The Russell 3000 Index rose 14.0% during the first quarter and 8.8% over the one-year period.
- All sectors generated positive returns over the quarter. In particular, Technology (19.3%) and Producer Durables (17.6%) were the best performing sectors in Q1 2019.
- Performance was positive across the market capitalization spectrum over the quarter. In general, large cap stocks underperformed both medium and small cap stocks over the quarter. Growth stocks outperformed their Value counterparts in Q1 2019; a continuation of a longer-lasting trend where Value stocks have lagged their Growth stock equivalents significantly over the last twelve months.

U.S. Fixed Income Markets

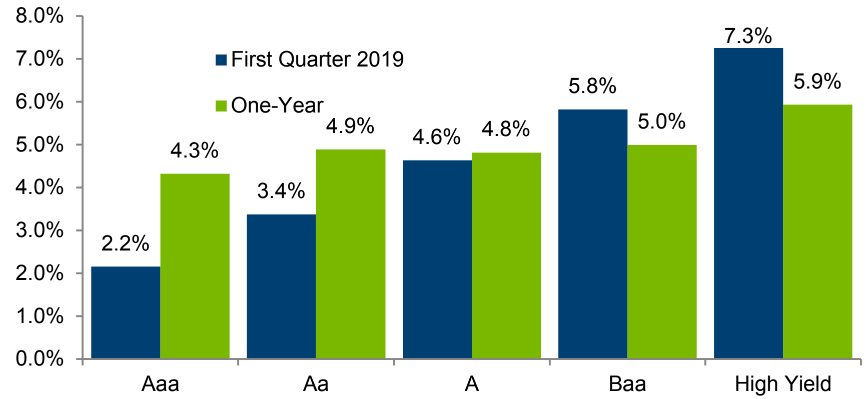
BLOOMBERG BARCLAYS AGGREGATE RETURNS BY SECTOR AS OF 03/31/2019



Source: FactSet

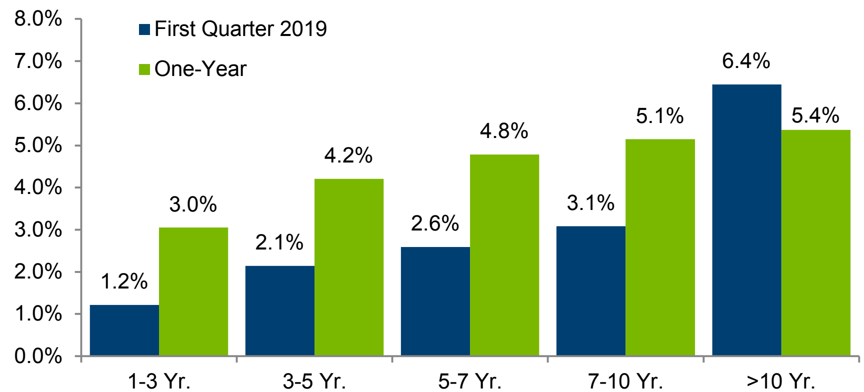
- The Bloomberg Barclays U.S. Aggregate Bond Index rose by 2.9% over the quarter. Corporate bonds were the best performers, returning 5.1% whilst ABS bonds underperformed with a return of 1.5%.
- Performance was positive across all credit grades. High yield bonds rose the most at 7.3%. Within investment grade bonds, Baa bonds outperformed with a return of 5.8%.
- Long-maturity bonds outperformed intermediate and short-maturity bonds over the quarter. Long-maturity bonds returned 6.4% while short-maturity bonds returned only 1.2% in Q1 2019.

BLOOMBERG BARCLAYS AGGREGATE RETURNS BY QUALITY AND HIGH YIELD RETURNS AS OF 03/31/2019



Source: FactSet

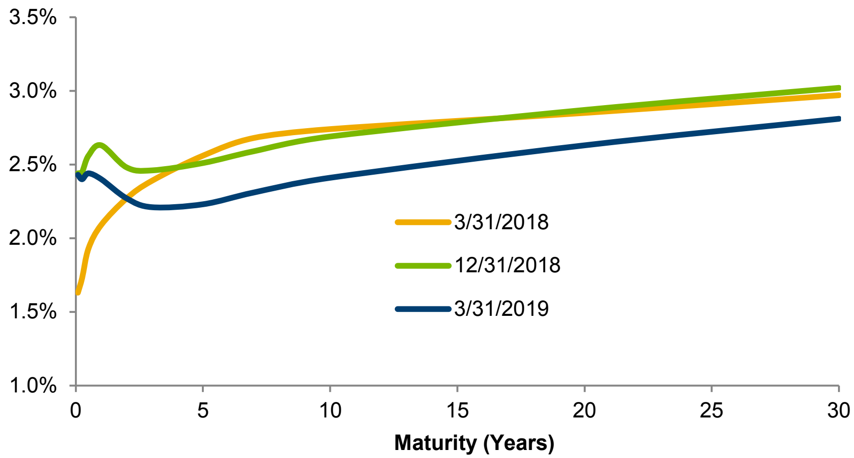
BLOOMBERG BARCLAYS AGGREGATE RETURNS BY MATURITY AS OF 03/31/2019



Source: FactSet

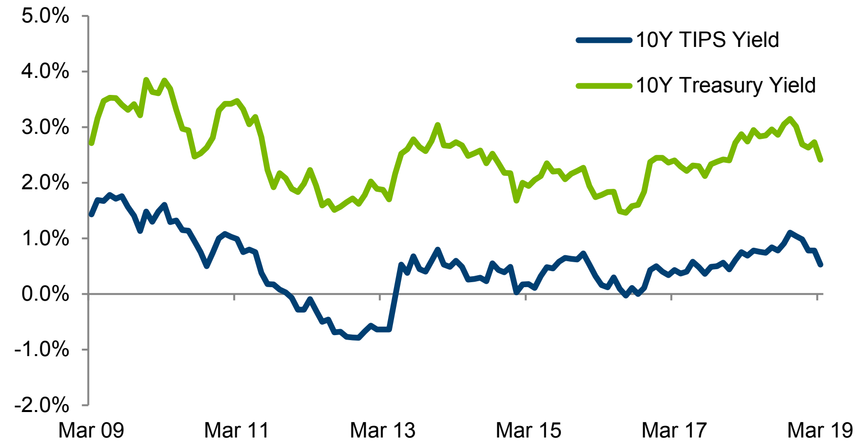
U.S. Fixed Income Markets

U.S. TREASURY YIELD CURVE



Source: U.S. Department of Treasury

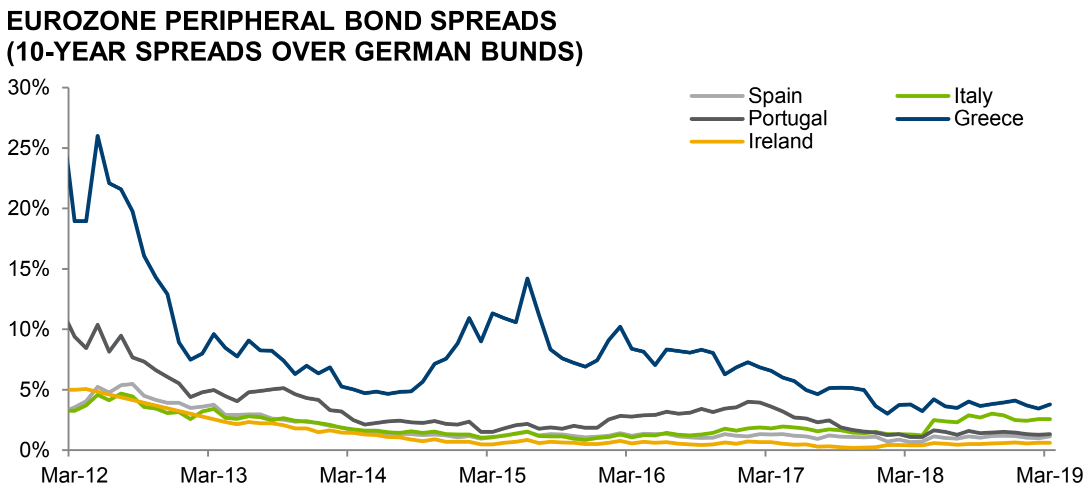
U.S. 10-YEAR TREASURY AND TIPS YIELDS



Source: U.S. Department of Treasury

- The U.S. nominal yield curve shifted downwards over the quarter with yields falling across all maturities. The U.S. treasury yield curve flattened significantly in Q1. The difference between three-month and ten-year U.S. treasury yields (a key measure of the U.S. yield curve watched by the Fed and seen as an indicator of a coming recession) turned negative for the first time since August 2007.
- The 10-year U.S. Treasury yield ended the quarter at 2.41%, 28bps lower than at the start of the quarter in which the US Federal Reserve (Fed) decided to pause after hiking interest rates over the past year. Projected rate hikes for 2019 have been abandoned and pushed back later to 2020. Moreover, September is now earmarked as the end of the Fed's balance sheet tightening, while the pace of quantitative tightening will halve from May onwards (from $30bn to $15bn).
- The 10-year TIPS yield fell by 45bps over the quarter and ended the period at 0.53%.

European Fixed Income Markets



Source: FactSet

- Bond spreads over 10-year German bunds generally fell across the eurozone (except for Italy).The European Central Bank (ECB) pushed back its interest rate to 2020 at the earliest. The ECB announced the third iteration of the Targeted Long-Term Refinancing Operations (TLTRO), aimed at encouraging bank supply of credit. This comes just one quarter after the ECB ended its quantitative easing programme.
- German government bund yields fell by 31bps to -0.07% over the quarter with the yields falling below zero for the first time in two years after the country's manufacturing sector dived deeper into contraction territory. Italian government bond yields fell by 25bps to 2.49% over the quarter. Both Fitch and Moody's credit rating agencies kept their ratings unchanged for Italian sovereign bonds at BBB and Baa3 respectively, easing fears of a downgrade expected by some market participants.
- Portuguese government bond yields fell by 46bps to a record low of 1.25%, as Standard and Poor's upgraded the country's credit rating to BBB.
- Greek government bond yields fell by 62bps to 3.73% over the quarter which saw the successful release of the country's first new bond issuance since it exited its third bailout programme in August 2018.

Credit Spreads

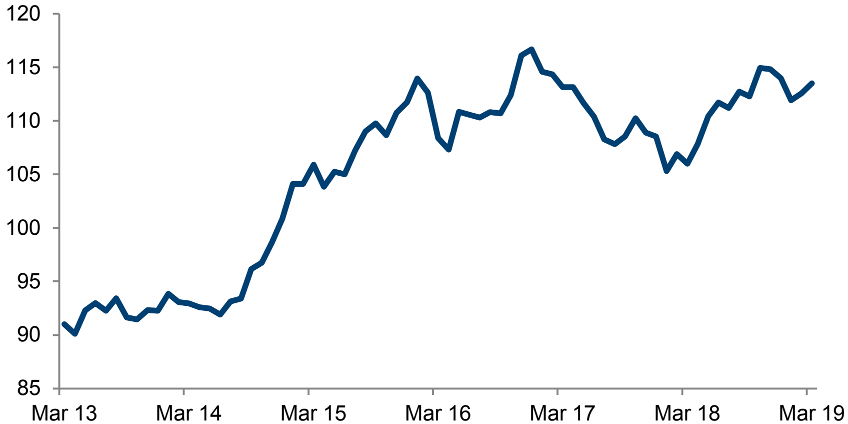
Spread (bps)	3/31/2019	12/31/2018	3/31/2018	Quarterly Change (bps)	1-Year Change (bps)
U.S. Aggregate	44	54	41	-10	3
Gov't	0	1	0	-1	0
Credit	113	143	103	-30	10
Gov't/Credit	48	60	45	-12	3
MBS	35	35	29	0	6
CMBS	69	86	67	-17	2
ABS	39	53	48	-14	-9
Corporate	119	153	109	-34	10
High Yield	391	526	354	-135	37
Global Emerging Market	283	330	230	-47	53

Source: Barclays Live

- Against a backdrop of improving risk appetite, credit spreads over U.S. Treasuries generally narrowed over the quarter.
- Broadly retracing the prior quarter's credit spread widening, High Yield bond spreads narrowed significantly in Q1 2019, decreasing by 135bps. This was followed by Global Emerging Markets bonds spreads, which narrowed by 47bps.

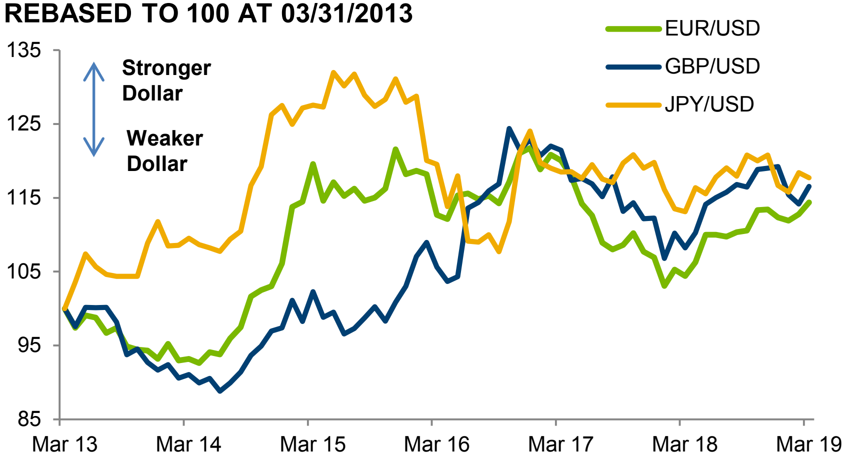
Currency

TRADE WEIGHTED U.S. DOLLAR INDEX (1973 = 100)



Source: Federal Reserve

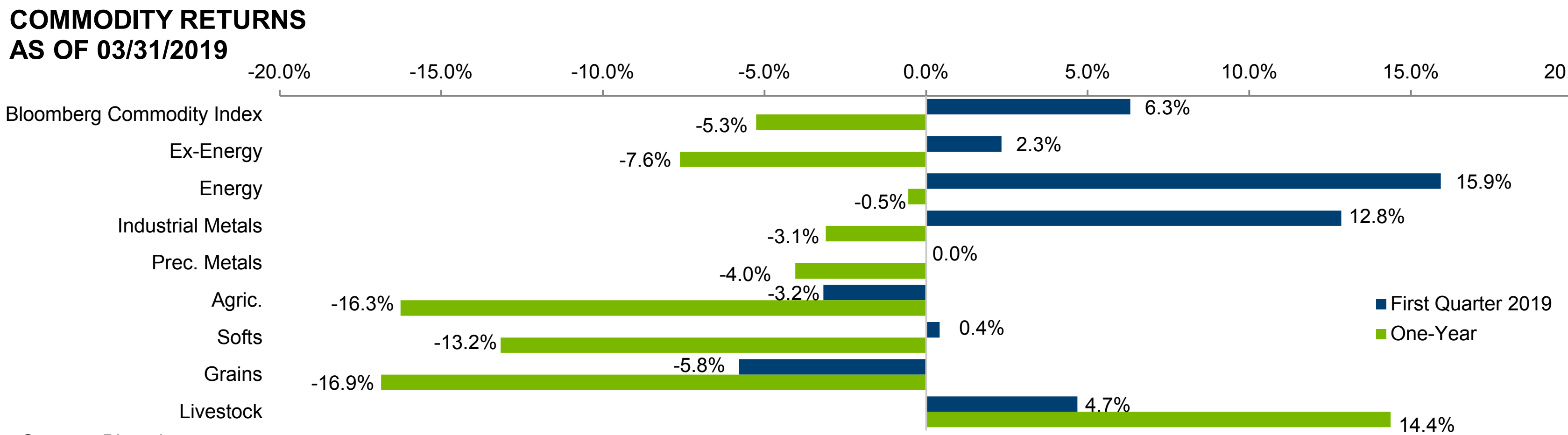
U.S. DOLLAR RELATIVE TO EUR, GBP AND JPY REBASED TO 100 AT 03/31/2013



Source: Factset

- The U.S. dollar had a mixed performance against major currencies over the quarter and ended marginally lower as it fell 0.4% on a trade-weighted basis over the quarter. U.S. dollar appreciated against euro and yen but depreciated against sterling and Canadian dollar.
- In the UK, it became clear over the quarter that a "no deal" Brexit scenario does not seem to have parliamentary backing, prompting sterling to find firmer footing. Sterling appreciated by 2.3% against the U.S. dollar.
- Alongside a more dovish ECB and a weaker economic outlook, the euro notably underperformed, falling against all major currencies. In particular, the euro depreciated by 1.8% against the U.S. dollar.

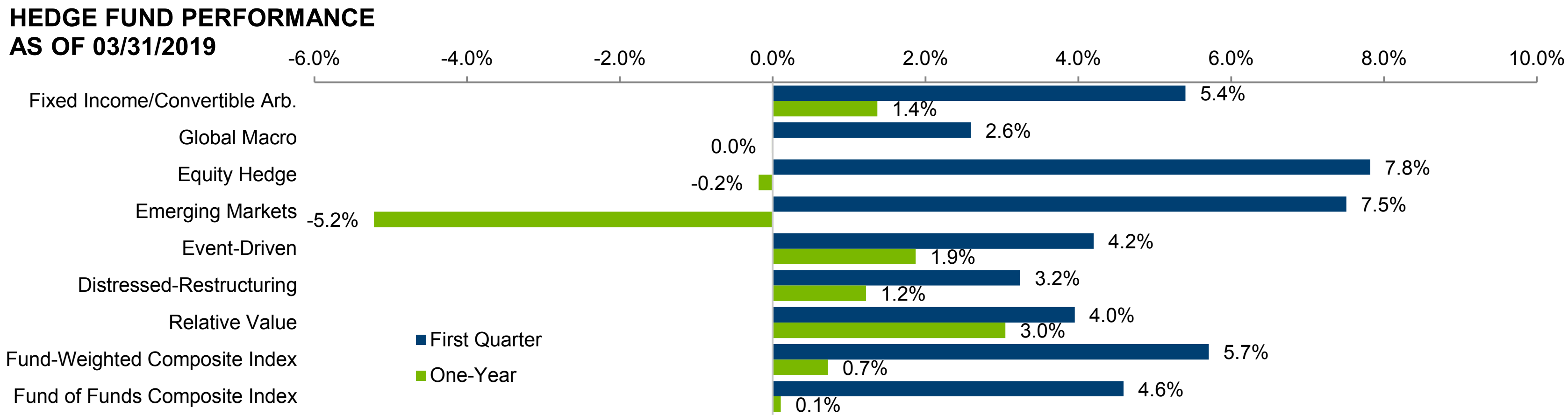
Commodities



Source: Bloomberg

- Commodities rose over the quarter which saw the Bloomberg Commodity Index return 6.3%.
- Energy was the best performing sector over the quarter with a return of 15.9% as crude oil prices rose sharply. The cut in OPEC's crude oil production, as well as an unexpected fall in U.S. inventories, more than offset the potentially dampening effect on commodity demand from weakening economic growth and trade. The price of Brent crude oil rose by 27.1% to $68/bbl. and WTI crude oil spot prices rose by 32.4% to $60/bbl.
- Agriculture (-3.2%) was the worst performing sector in Q1 2019. Within the Agriculture sector, Softs rose by 0.4% whilst Grains fell by 5.8%.

Hedge Fund Markets Overview

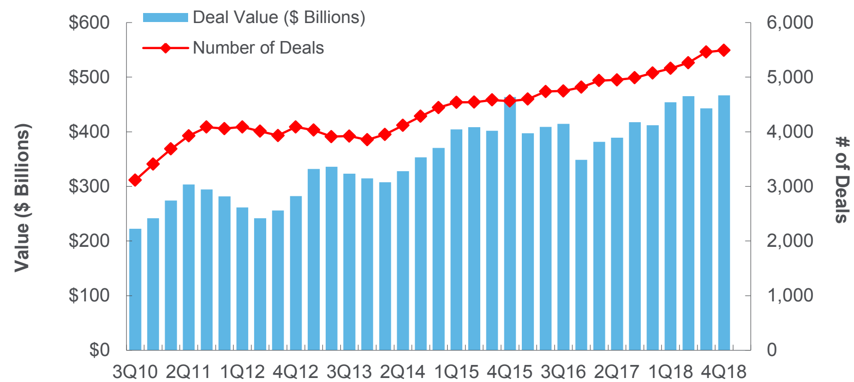


Note: Latest 5 months of HFR data are estimated by HFR and may change in the future.
Source: HFR

- Hedge fund performance was positive across all strategies in the first quarter.
- Over the quarter, Equity Hedge and Emerging Markets strategies were the best performers with returns of 7.9% and 7.8%, Conversely, Distressed-Restructuring and Global Macro were the worst performers, returning 3.3% and 2.9% respectively.
- HFRI Fund-Weighted Composite Index and the HFRI Fund of Funds Composite Index produced returns of 5.9% and 5.0% respectively.

Private Equity Market Overview – 4Q 2018

LTM Global Private Equity-Backed Buyout Deal Volume

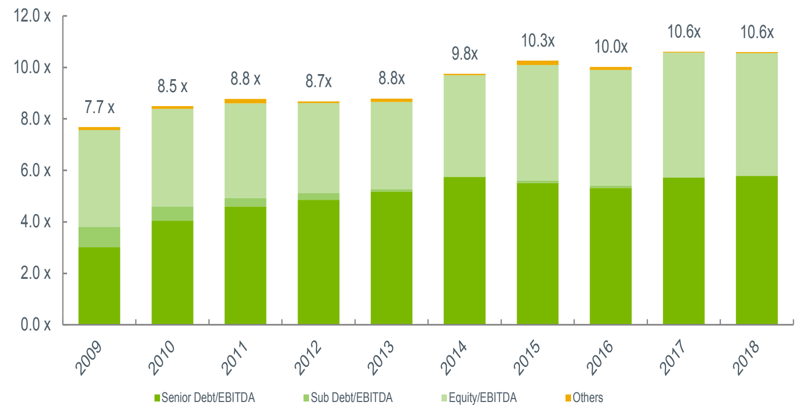


Source: Preqin

- **Fundraising:** In 2018, $459.6 billion was raised by 1,373 funds, which was a decrease of 27.1% on a capital basis but an increase of 0.7% by number of funds from the prior year. Dry powder stood at $1.89 trillion at the end of the year, an increase of 11.8% and 39.9% compared to year-end 2017 and the five year average, respectively.[1]
- **Buyout:** Global private equity-backed buyout deals totaled $466.9 billion in 2018, which was up 13.3% and 22.3% from 2017 and five year average, respectively.[1] At the end of 2018, the average purchase price multiple for all U.S. LBOs was 10.6x EBITDA, flat with year-end 2017 and up from the five-year average (9.9x).[2] Large cap purchase price multiples stood at 10.6x, up compared to the full-year 2017 level of 10.4x.[2] The weighted average purchase price multiple across all European transaction sizes averaged 11.3x EBITDA for year-end 2018, up from the 10.7x multiple seen at year-end 2017. Purchase prices for transactions of €1.0 billion or more increased from 11.6x in 2017 to 11.7x in 2018. Transactions between €500.0 million and €1.0 billion were up 0.8x from the end of 2017, and stood at 11.3x at year-end 2018.[2] Globally, exit value totaled $351.8 billion on 2,072 deals during the year, higher than the $337.1 billion in exits from 2,059 deals during 2017.
- **Venture:** During the year, 5,536 venture-backed transactions totaling $99.5 billion were completed, which was a substantial increase on a capital basis over the prior year's total of $76.4 billion across 5,824 deals. This was 31.6% higher than the five-year average of $75.6 billion.[3] Total U.S. venture-backed exit activity totaled approximately $122.0 billion across 864 completed transactions in 2018, up notably from $92.0 billion across 885 exits in 2017.[4]
- **Mezzanine:** 56 funds closed on $31.7 billion during the year. This was a significant increase from the prior year's total of $12.4 billion raised by 48 funds and represented an increase of 38.4% from the five-year average of $22.9 billion. Estimated dry powder was $58.4 billion at the end of 2018, up by $4.9 billion from the prior year and higher than the $53.1 billion high seen at year-end 2016.[1]

Private Equity Market Overview – 4Q 2018

U.S. LBO Purchase Price Multiples – All Transactions Sizes



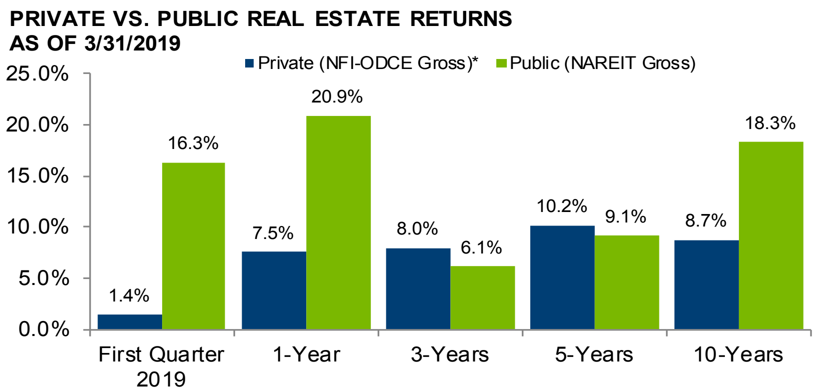
Source: S&P

- **Distressed Debt**: The LTM U.S. high-yield default rate was 2.4% as of December 2018, which was up from December 2017's LTM rate of 1.3%.[5] During the year, $39.3 billion was raised by 63 funds, lower than the $48.1 billion raised by 72 funds during 2017.[1] Dry powder was estimated at $117.6 billion at the end of 2018, which was up 6.7% from year-end 2017. This remained above the five-year annual average level of $96.4 billion.[1]
- **Secondaries**: 26 funds raised $21.2 billion during the year, down significantly from the $42.8 billion raised by 50 funds in 2017.[1] The average discount rate for all private equity sectors finished the year at 8.9%, higher than the 7.9% discount at the end of 2017.[6]
- **Infrastructure**: $92.9 billion of capital was raised by 75 funds in 2018 compared to $77.8 billion of capital raised by 100 partnerships in 2017. At the end of the year, dry powder stood at $177.0 billion, up from last year's record of $164.0 billion. Infrastructure managers completed 2,454 deals with an aggregate deal value of $322.0 billion in 2018 compared to 3,165 deals totaling $387.0 billion in 2017.[1]
- **Natural Resources**: During 2018, 35 funds closed on $19.1 billion compared to 44 funds totaling $21.9 billion in 2017. Energy and utilities industry managers completed 150 deals totaling $34.4 billion in 2018, compared to $36.9 billion across 130 deals in 2017.[1]

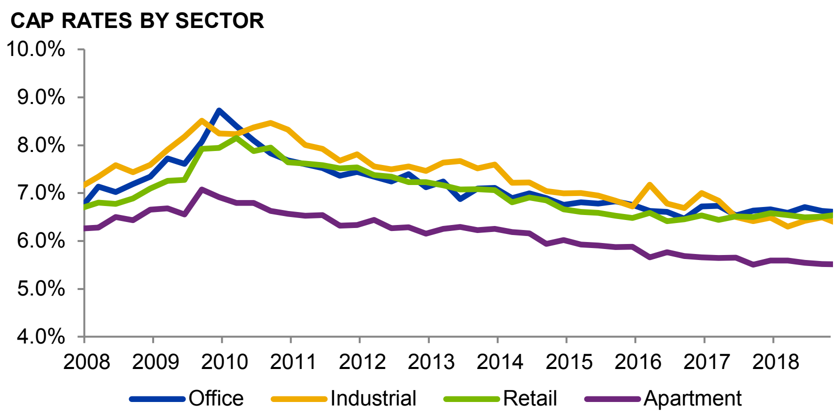
Sources: [1] Preqin [2] Standard & Poor's [3] PwC/CB Insights MoneyTree Report [4] PitchBook/NVCA Venture Monitor [5] Fitch Ratings [6] Thomson Reuters [7] UBS

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

U.S. Commercial Real Estate Markets



*Second quarter returns are preliminary
Sources: NCREIF, Factset



Sources: RCA, AON 12/31/2018

- U.S. Core real estate returned 1.42%* over the first quarter, equating to 7.5% total gross return year-over-year, including a 4.2% income return. Debt mark to market was a drag on the quarterly return as a result of declining interest rates. Net income growth is expected to be the larger driver of the total return on a go forward basis given the current point of the real estate cycle.
- Global property markets, as measured by the FTSE EPRA/NAREIT Global Developed Real Estate Index, returned 14.9% (USD) in aggregate during the first quarter. Sector strength was largely attributed to a broader equity market rally due to an abrupt shift in monetary policy across major economies. The EU restarted QE just 2 months after ceasing the program, and the US Fed communicated a general pause from increasing rates for 2019. REIT market performance was driven by Asia Pacific (15.6% USD), North America (16.0% USD) and Europe (12.2% USD). The U.S. REIT markets (FTSE NAREIT Equity REITs Index) gained 16.3% in the first quarter. U.S. 10-year Treasury bond yield fell to 2.41%, after hitting highs over 3% in 2018. the movement was supportive to REIT share prices. Similarly, the German 10-year bond yield fell from .24% back to -0.07% at the end of the quarter.
- According to RCA through February 2019, the U.S. property market has experienced price growth of 6.3% year-over-year across major sectors. In addition, transaction volume was down 4% over the same period.
- Return expectations have normalized, with go forward expectations in line with historical norms. Declining interest rates have led to a rally across various asset classes. According to Preqin, there remains a record amount of dry powder ($326 billion) in closed-end vehicles seeking real estate exposure, which should continue to lend support to valuations and liquidity in the commercial real estate market.

*Indicates preliminary NFI-ODCE data gross of fees

Notes

1. Preqin
2. Standard & Poors
3. PitchBook/National Venture Capital Association Venture Monitor
4. First Trust Advisors
5. Evercore

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

Legal Disclosures and Disclaimers

Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc. ("AHIC"). The information contained herein is given as of the date hereof and does not purport to give information as of any other date. The delivery at any time shall not, under any circumstances, create any implication that there has been a change in the information set forth herein since the date hereof or any obligation to update or provide amendments hereto.

This document is not intended to provide, and shall not be relied upon for, accounting, legal or tax advice or investment recommendations. Any accounting, legal, or taxation position described in this presentation is a general statement and shall only be used as a guide. It does not constitute accounting, legal, and tax advice and is based on AHIC's understanding of current laws and interpretation.

This document is intended for general information purposes only and should not be construed as advice or opinions on any specific facts or circumstances. The comments in this summary are based upon AHIC's preliminary analysis of publicly available information. The content of this document is made available on an "as is" basis, without warranty of any kind. AHIC disclaims any legal liability to any person or organization for loss or damage caused by or resulting from any reliance placed on that content. AHIC. reserves all rights to the content of this document. No part of this document may be reproduced, stored, or transmitted by any means without the express written consent of AHIC.

The opinions referenced are as of the date of publication and are subject to change due to changes in the market or economic conditions and may not necessarily come to pass. Information contained herein is for informational purposes only and should not be considered investment advice.

Aon Hewitt Investment Consulting, Inc. is a federally registered investment advisor with the U.S. Securities and Exchange Commission. AHIC is also registered with the Commodity Futures Trade Commission as a commodity pool operator and a commodity trading advisor, and is a member of the National Futures Association. The AHIC ADV Form Part 2A disclosure statement is available upon written request to:

Aon Hewitt Investment Consulting, Inc.

200 E. Randolph Street

Suite 1500

Chicago, IL 60601

ATTN: AHIC Compliance Officer

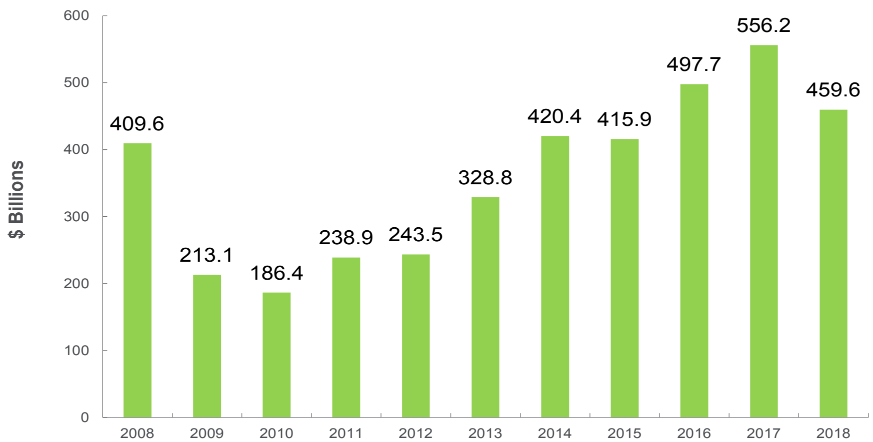
(This page left blank intentionally)

Appendix A:

Global Private Equity Market Overview
4Q 2018

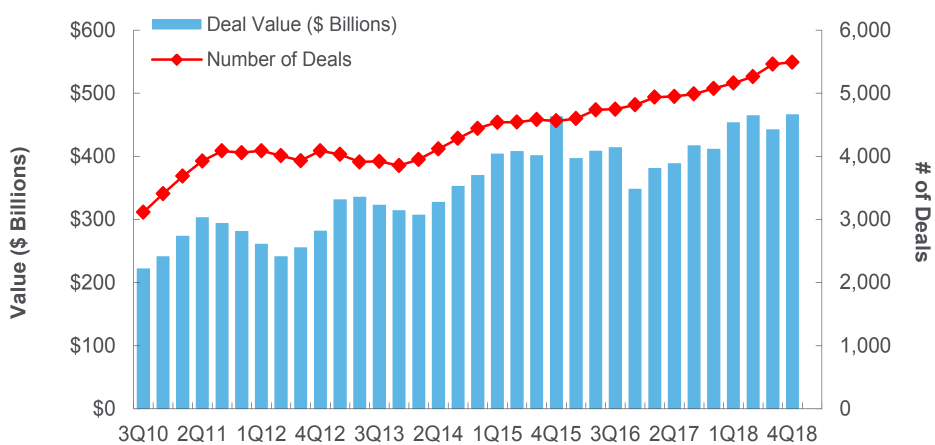
Private Equity Overview

Total Funds Raised



Source: Preqin

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

Fundraising

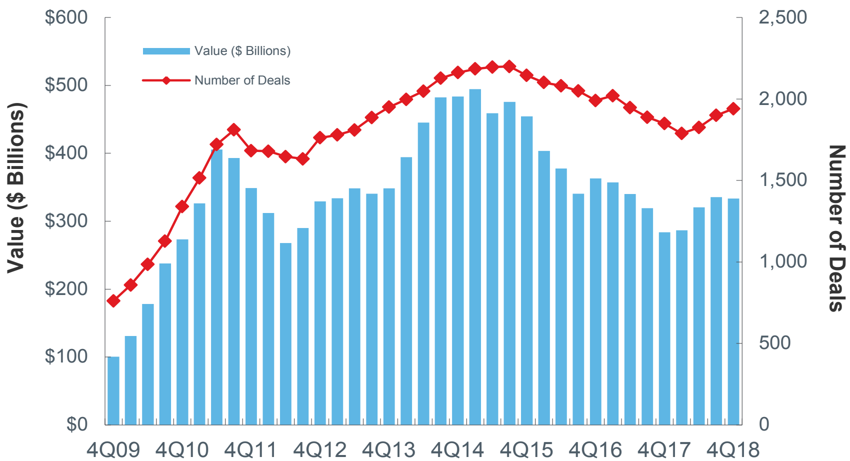
- In 2018, $459.6 billion was raised by 1,373 funds, which was a decrease of 27.1% on a capital basis but an increase of 0.7% by number of funds from the prior year.[1]
  - 2018 fundraising was 2.3% lower than the five-year average.
  - The majority of 2018 capital was raised by funds with target geographies in North America, comprising 59.1% of the annual total. Capital targeted for Europe made up 25.2% 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 $1.89 trillion at the end of the year, an increase of 11.8% and 39.9% compared to 2017 and the five-year average, respectively.[1]

Activity

- In 2018, 5,491 deals were completed for an aggregate deal value of $466.9 billion as compared to 5,077 transactions totaling $412.0 billion in 2017.[1]
  - This was 22.3% higher than the five-year average deal volume of $381.9 billion.
  - Average deal size was $85.0 million in 2018. This was up 4.8% compared to the prior year, but down 4.6% relative to the five-year average.
- European LBO transaction volume totaled €69.1 billion in 2018, up 6.8% compared to 2017's total of €64.7 billion. 2018's total was also up significantly compared to the five-year average level of € 52.1 billion.[3]
- At the end of 2018, the average purchase price multiple for all U.S. LBOs was 10.6x EBITDA, flat with year-end 2017 (10.6x) and up from the five-year average (9.9x). Middle-market purchase price multiples stood at 10.6x, flat with the 10.6x observed at year-end 2017.[3]
  - This was 0.7x and 1.4x turns (multiple of EBITDA) above the five and ten-year average levels, respectively.
- European multiples were up 0.6x year-over-year, averaging 11.3x EBITDA for all transaction sizes, with large and medium transactions each running at 11.7x and 11.3x, respectively.[3]
- Debt remained broadly available in the U.S.
  - U.S. average leverage levels in 2018 were 5.8x compared to the five and ten-year averages of 5.6x and 5.1x, respectively.[3]
  - The amount of debt issued supporting new transactions increased compared to 2017 from 58.7% to 59.9% but is slightly below the 60.1% average level over the prior five years.[3]
- In Europe, average senior debt/EBITDA in 2018 was 5.5x, up from the 5.4x observed 2017. This was also up over the five-year average of 5.2x and ten-year average level of 4.9x.

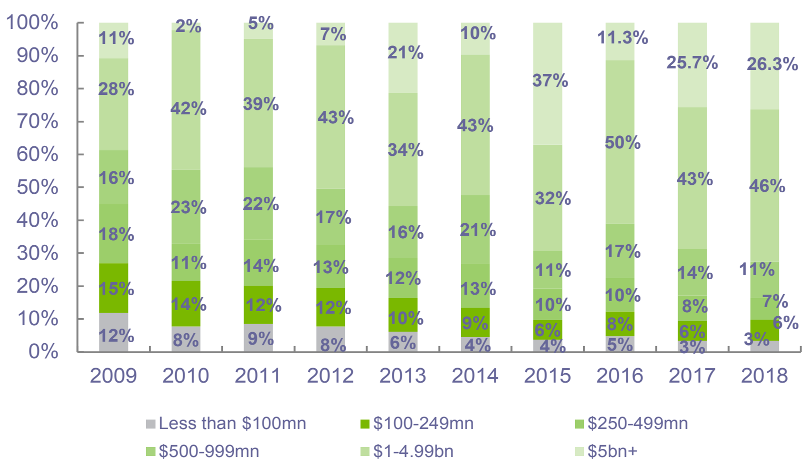
Buyouts / Corporate Finance

LTM PE Exit Volume and Value



Source: Preqin

M&A Deal Value by Deal Size



Source: Preqin

Fundraising

- $309.6 billion was closed on by 418 buyout and growth funds in 2018, compared to $386.0 billion raised by 669 funds the year before.[1]
  - This was significantly higher than the five-year average of $287.9 billion.
  - Hellman & Friedman Capital Partners X was the largest fund raised, closing on $16.0 billion.[1] This was below the record-breaking total from Apollo Investment Fund IX, which raised $24.7 billion in 2017.[12]
- Buyout and growth equity dry powder was estimated at $905.4 billion, which surpassed the record level of $767.7 billion observed at the end of 2017 and was substantially higher than the five-year average level of $599.9 billion.[1]
  - Aside from large cap funds, which decreased 3.5% year-over-year, buyout dry powder increased across all fund size categories in 2018. Mega fund dry powder exhibited the largest increase during the year (31.6%), setting a new record mark of $291.6 billion. Middle and small market buyout dry powder finished the year up 0.7% and 22.4%, respectively, from 2017.[1]
  - An estimated 57.7% of buyout dry powder was targeted for North America, while European dry powder comprised 27.3% of the total.[1]

Activity

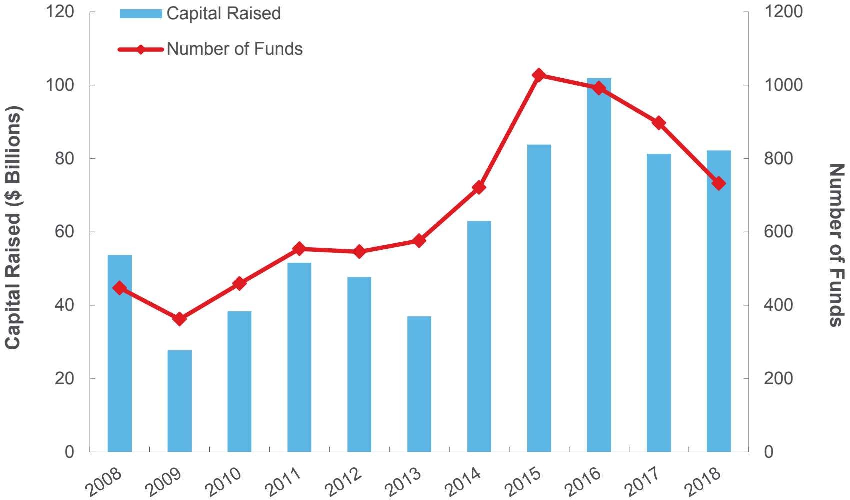
- Global private equity-backed buyout deals totaled $466.9 billion in 2018, which was an increase of 13.3% and 22.3% from 2017 and the five-year average, respectively.[1]
  - 1,372 deals were completed during Q4 2018, which was down 1.4% from 3Q 2018 but up 14.0% compared to the five-year quarterly average.
  - In 2018, deals valued at $5.0 billion or greater accounted for an estimated 26.3% of total deal value during the year compared to 25.7% in 2017 and 11.3% in 2016.[1]
- Entry multiples for all transaction sizes in 2018 stood at 10.6x EBITDA, flat with 2017's level (10.6x).[3]
  - Middle-market purchase price multiples stood at 10.6x, down compared to 11.6x in 2017.[3]
  - The weighted average purchase price multiple across all European transaction sizes averaged 11.3x EBITDA on a full-year 2018 basis, up from 10.7x in 2017. Purchase prices for transactions of €1.0 billion or more increased slightly from 11.6x to 11.7x year-over-year.
  - Transactions between €250.0 million and €500.0 million were down 1.0x from 2017, and stood at 8.7x.[3]
  - The portion of average purchase prices financed by equity for all deals was 40.1% in 2018, down from 41.3% in 2017. This remained above the five and ten-year average levels of 39.0% and 39.7%, respectively.[3]
- Globally, exit value totaled $351.8 billion for 2,072 deals in 2018 compared to $337.1 billion for 2,059 deals in the prior year.[1]

Opportunity

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

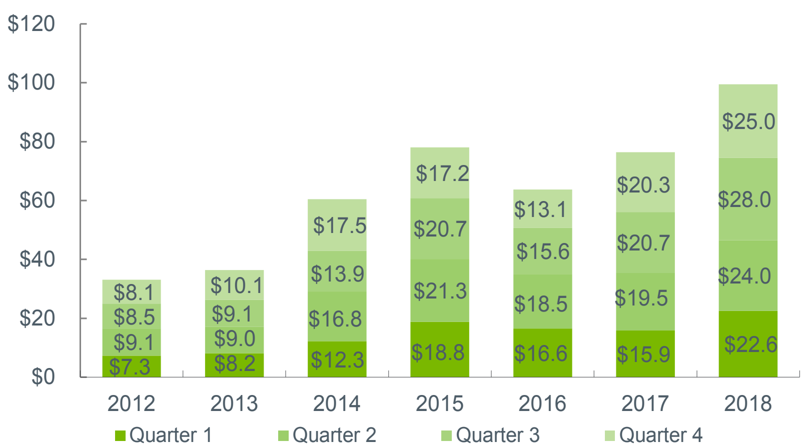
Venture Capital

Venture Capital Fundraising



Source: Preqin

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



Source: PwC/CB Insights Report

Fundraising

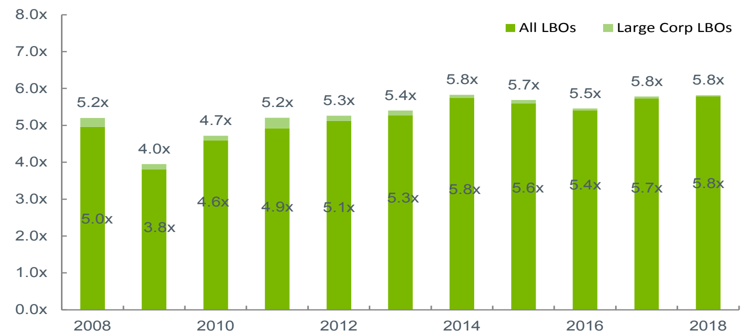
- $82.2 billion of capital was raised by 732 funds in 2018, up from the prior year's total of $81.3 billion raised by 897 managers. Continuing the trend seen in previous quarters, a fewer number of funds continue to raise larger pools of capital, raising the average fund size to $138.0 million.[1]
  - 2018 fundraising was down slightly by 0.3% on a capital basis compared to the five-year average, due largely to 2016 driving the five-year average higher.
  - Tiger Global Private Investment Partners XI was the largest fund raised during the year, closing on $3.8 billion.
- The average fund size raised during the year was approximately $138.0 million. This represented a slight increase compared to 2017's average of $137.0 million and increased the spread between the five-year average fund size of $122.0 million.
- At the end of 2018, there were an estimated 2,222 funds in market targeting $172.0 billion.[1]
  - Shanghai Changsanjiao Xietong Fund was the largest venture fund in market, targeting an estimated $14.9 billion, or 100,000,000,000 CNY.
  - The majority of funds in market are seeking commitments of $200.0 million or less.
- Dry powder was estimated at $229.7 billion at the end of 2018, which was up from 2017's total of $206.6 billion. This was 38.6% higher than the five-year average.[1]

Activity

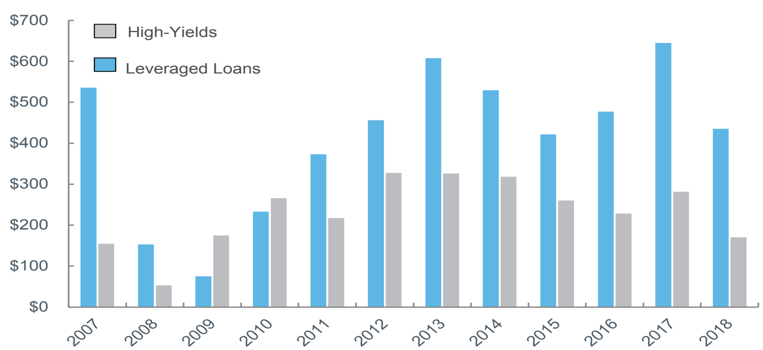
- During the year, 5,536 venture-backed transactions totaling $99.5 billion were completed, which was an increase on a capital basis over the prior year's total of $76.4 billion across 5,824 deals. This was 31.5% higher than the five-year average of $75.6 billion.[7]
  - In 2018, there were 120 U.S.-based unicorn deals closed, with 40 deals closed in Q3 2018 alone. This was up substantially by number compared to 2017, which saw 76 unicorn deals closed. 2018 also marks a substantial increase from 2017 in regards to total deal value, jumping from $17.8 billion to $44.5 billion.[8]
- At the end of 2018, median pre-money valuations increased across all transaction stages. Compared to year-end 2017, Series D+ transactions exhibited the largest increase (373.5%) and reached $746.9 million. Seed, Series A, Series B, and Series C transactions were up 16.4%, 3.3%, 23.7%, and 32.7% respectively, from year-end 2017 levels.[9]
- Total U.S. venture-backed exit activity totaled approximately $122.0 billion across 864 completed transactions in 2018, up significantly from $92.0 billion across 885 exits in 2017.[8]
  - The number of U.S. venture-backed initial public offerings declined over both Q2 2018 and Q3 2018, with 17 IPOs completed in 4Q 2018. However, this brought the number of IPOs in 2018 to 86, the highest number, by both offerings and amount raised, of completed transactions since 2014.[16]
  - Q4 2018 marked the second-best quarter on record in regards to the amount paid for VC-backed companies, reaching a total of $39.8 billion, the largest such figure since Q4 2014. The number of M&A transactions totaled 784 in 2018 amounting to $146.2 billion in value, representing an increase by number and amount paid of 10.9% and 63.6%, respectively, year-over-year.[16]

Leveraged Loans & Mezzanine

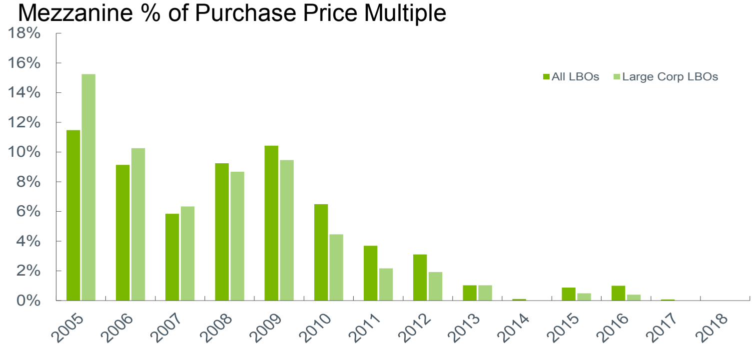
Average Leverage by Deal Size



Debt Issuance ($ Billions)



Mezzanine % of Purchase Price Multiple



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

Leveraged Loans

Fundraising

- New CLO issuance totaled $128.9 billion in 2018, up 9.1% from 2017.[2]
- High-yield debt issuance totaled $169.8 billion in 2018, down from $276.3 billion in 2017.[2]
- Mutual fund net flows ended 2018 with a net outflow of $35.9 billion, compared to a net outflow of $9.9 billion in 2017.[2]

Activity

- Leverage for all LBO transactions ended the year at 5.8x, up from 2017's level of 5.7x. Leverage continues to be comprised almost entirely of senior debt. The average leverage level for large cap LBOs was 5.8x during the year, flat with 2017.[3]
- YTD institutional new leveraged loan issuances totaled $437.3 billion in 2018, down from 2017's total of $504.4 billion.[2]
- 68.2% of new leveraged loans were used to support M&A and growth activity in 2018, up from 60.3% in 2017. This was also above the prior five-year average of 54.8%.[3]
- European leveraged loan issuance decreased by 2.8% year-over-year to €76.4 billion.[3]
  - This was above the five-year and ten-year average levels of €54.9 billion and €40.4 billion, respectively.
- Leveraged loan spreads for B rated issues ended the year at L+404 bps compared to L+375 bps at year-end 2017. BB- index spreads widened from L+214 bps to L+316 bps during the year, which also marked an increase from the year-end 2017 level of L+229 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

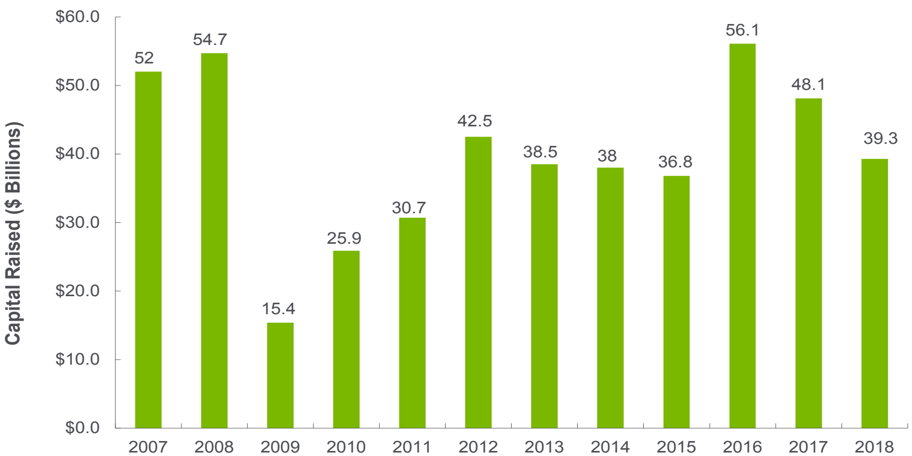
- 56 funds closed on $31.7 billion during the year. This was a significant increase from the prior year's total of $12.4 billion raised by 48 funds and represented an increase of 38.4% from the five-year average of $22.9 billion.[1]
- Estimated dry powder was $58.4 billion at the end of 2018, which was up 9.2% from year-end 2017.[1]
- Fundraising activity has cooled slightly with an estimated 22 funds in market targeting $6.1 billion of commitments, compared to 67 funds in market at the end of 2017 targeting $25.0 billion of commitments. Blue Like An Orange Sustainable Capital Latin America Fund I is the largest fund in market, targeting commitments of $1.0 billion.[1]

Opportunity

- Funds with the capacity to scale for large sponsored deals

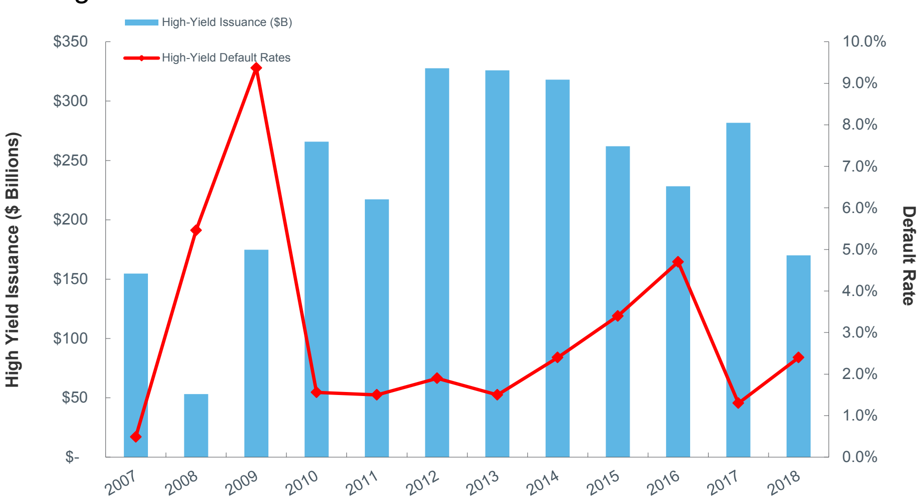
Distressed Private Markets

Distressed Debt, Turnaround, & Special Situations Fundraising



Source: Thomson Reuters

High-Yield Bond Volume vs Default Rates



Source: UBS & Fitch Ratings

Fundraising

- During the year, $39.3 billion was raised by 63 funds compared to $48.1 billion raised by 72 funds in 2017.[1]
  - 2018 fundraising was 9.7% lower than the prior five-year average.
  - GSO Capital Solutions III was the largest partnership raised during the year, closing on $7.4 billion.
- Dry powder was estimated at $117.6 billion at the end 2018. This was up compared to both year-end 2017 ($105.8 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 $96.4 billion.[1]
- Roughly 40 funds were in the market at the end of 2018, seeking $25.6 billion in capital commitments.[1]
  - Distressed debt managers were targeting the most capital, seeking an aggregate $18.3 billion.
  - Fortress Credit Opportunities Fund V and GSO Energy Select Opportunities Fund II were the largest funds in market with target fund sizes of $5.0 billion each.

Activity

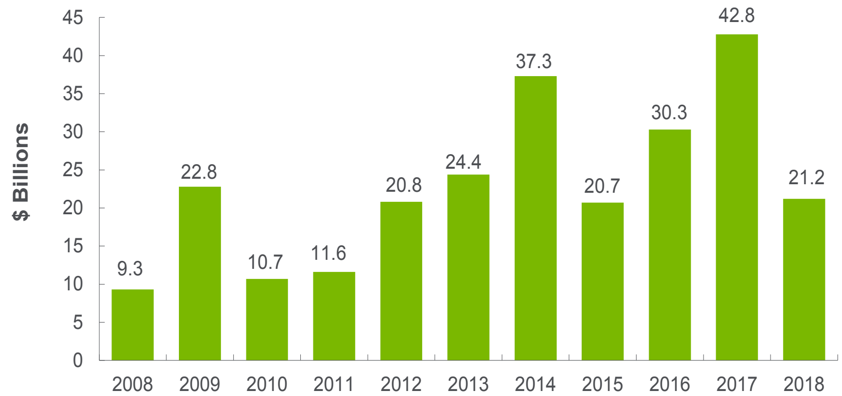
- Distressed debt and bankruptcy restructuring activity saw 77 companies default in 2018, down from 104 in 2017 and 144 in 2016.[5]
  - Quarter-over-quarter saw defaults rise from 14 in Q3 2018 to 17 by the end of Q4 2018.[5]
- The LTM U.S. high-yield default rate was 2.4% as of year-end 2018, which was up from year-end 2017's rate of 1.3%.[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]
- High purchase prices and continued elevated levels of leverage may result in an increase in distressed opportunities looking out over the next two to three years, or sooner if there is a stall in the economy.

Opportunity

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

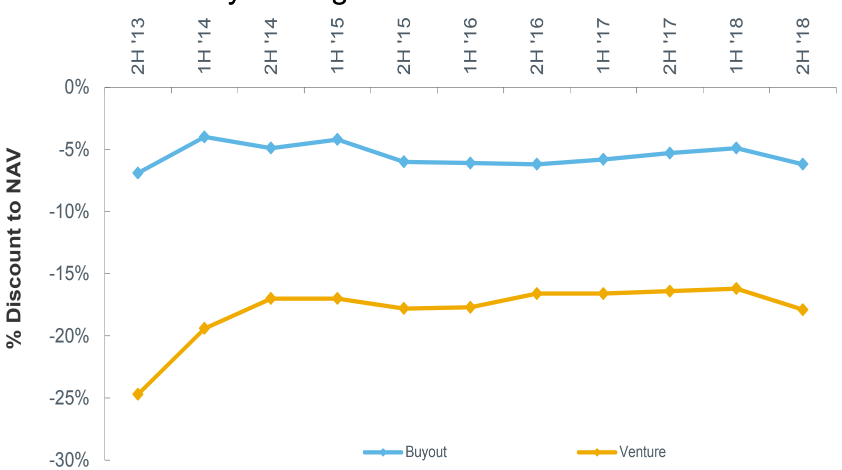
Secondaries

Secondary Fundraising



Source: Preqin

Secondary Pricing



Source: UBS

Fundraising

- 36 funds raised $21.2 billion during the year, down from $42.8 billion by 50 funds in 2017.[1]
  - Landmark Equity Partners XVI was the largest fund raised during the year, closing on $7.0 billion.
- As of year-end 2018, dry powder was estimated to be at $68.0 billion, which was higher than 4Q 2017's level of $46.0 billion.[2] The top 15 secondary buyers are estimated to command more than 74.0% of the market's capital reserves. The top 20 buyers are estimated to hold more than 90.0% of the market's dry powder.[1]
- Through 4Q 2018, there were an estimated 59 secondary and direct secondary funds in market, targeting approximately $79.4 billion. The majority of secondary funds are targeting North American investments.
  - Two funds account for 30.2% of all capital being raised: Lexington Capital Parnters IX and Ardian's ASF VIIII, both of which are targeting $12.0 billion.[1]

Activity

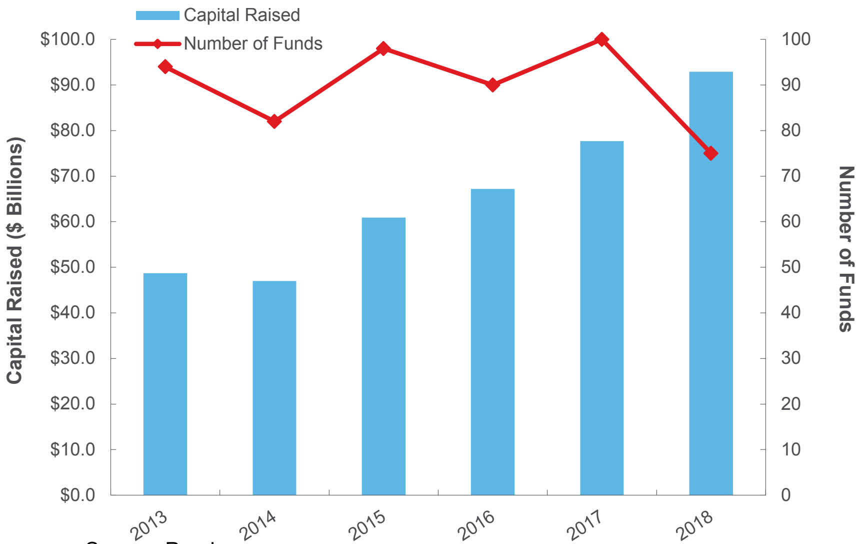
- The market continues to have strong participation from both buyers and sellers, with opportunistic selling activity from public and private pensions, financial institutions and insurance companies.
  - Secondary funds were the most active buyers in 2018, accounting for 84.4% of total purchases, followed by fund of funds, which accounted for 8.6% of purchases.[13]
  - Pension funds and General Partners (that are not fund of funds or secondaries funds) sold the most positions in 2018, accounting for 29.4% and 16.6% of volume, respectively.[13]
- In 2018, the private equity market transaction volume totaled $70.2 billion, representing an increase of 36.2% from the level observed in 2017. 62.4% of deal volume was traditional fund secondaries positions and the remainder were direct secondaries transactions.[13]
  - Leveraged buyout funds continued to be the most purchased private equity funds during 2018, representing 76.0% of deal flow on a capital basis, followed by venture capital at 12.0% of deal flow.[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 8.9%, up from 7.5% at the end of 2017. The average buyout pricing discount increased 1.3% during the year, ending the year at 6.2%.[2]
- Pricing is expected to remain attractive for sellers given lower targeted return thresholds, the strong level of dry powder, and the robust competitive dynamics seen in the sector.[2]
- GP-led transactions continue to take a greater share of transaction volume and activity, accounting for 37% of volume in 2018. [2]

Opportunity

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

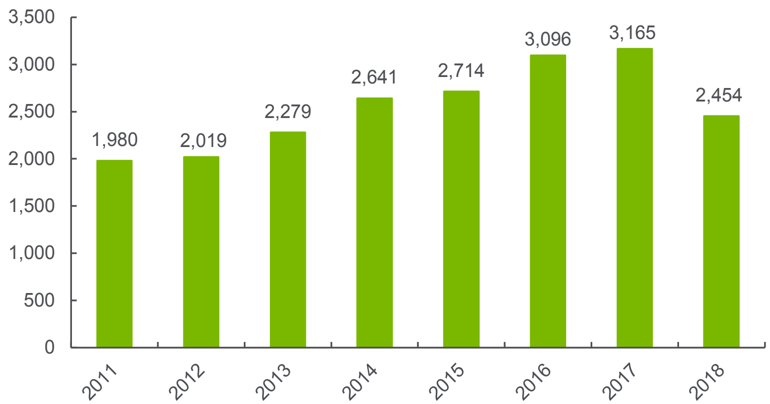
Infrastructure

Global Infrastructure Fundraising



Source: Preqin

Number of Deals Completed



Source: Preqin

Fundraising

- $92.9 billion of capital was raised by 75 funds in 2018 compared to $77.7 billion of capital raised by 100 partnerships in 2017, showing that capital is concentrated amongst a smaller set of infrastructure managers.[1]
  - KKR Global Infrastructure Investors III was the largest fund raised during the year, closing on $7.4 billion.[1]
- As of the end of 2018, there were an estimated 119 funds in the market seeking roughly $111.0 billion. [1]
  - Global Infrastructure Partners IC and Brookfield Infrastructure Fund IV were the largest funds in market, both seeking commitments of $20.0 billion.
- At the end of the year, dry powder stood at $177.0 billion, up from the 2017 year-end's record total of $164.0 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

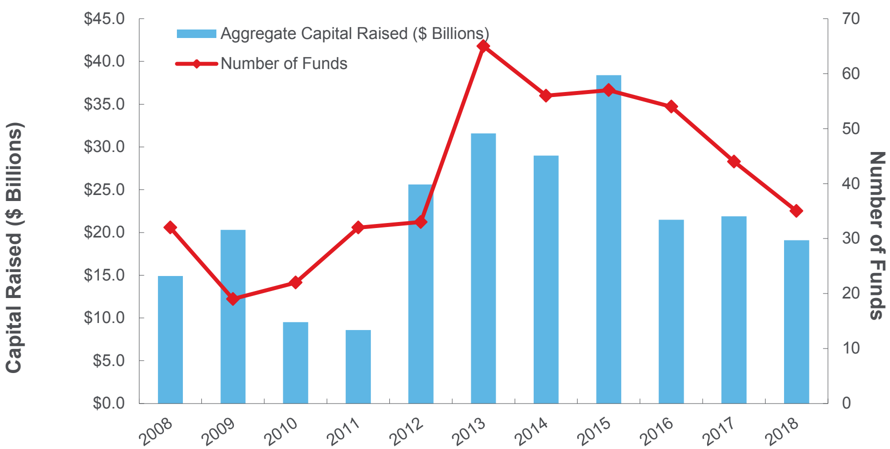
- Infrastructure managers completed 2,454 deals with an aggregate deal value of $321.5 billion in 2018 compared to 3,165 deals totaling $386.7 billion in 2017. The average deal value during the year was $131.0 million, up compared to 2017's average of $122.2 million, but down compared to the prior five-year average of $140.5 million.[1]
  - By region, Europe had the highest amount of aggregate deal value, with 47.2% of capital being invested in the region, followed by North America at 24.1%. Asia amassed 12.0% of activity during the year.
  - By value band, the number of infrastructure deals at values of $499.0 million or less accounted for 78.4% of deals during the year.
  - Renewable energy was the dominant industry during the year with 56.9% of transactions, followed by the utilities sector, which accounted for 12.1% of 2018's deals. Social infrastructure represented only 5.7% of transactions in 2018, down significantly from 18.5% in 2017.[1]

Opportunity

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

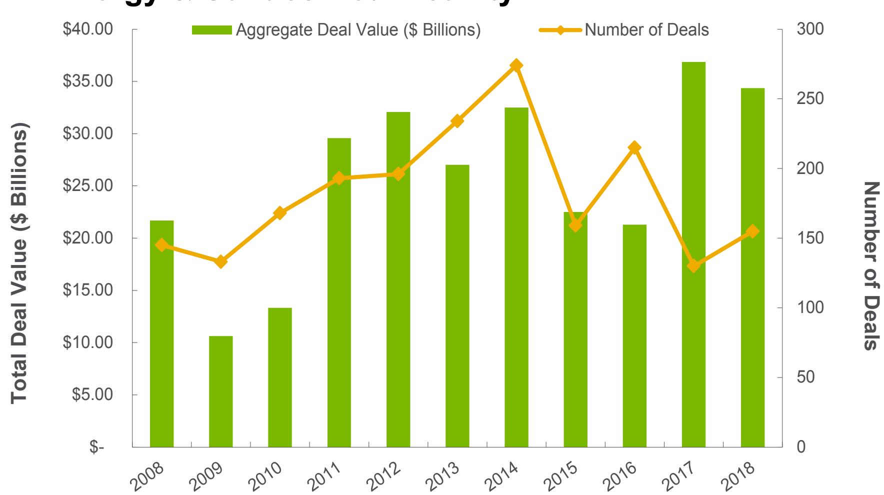
Natural Resources

Natural Resources Fundraising



Source: Preqin

Energy & Utilities Deal Activity



Source: Preqin

Fundraising

- During 2018, 35 funds closed on $19.1 billion compared to 54 funds totaling $21.9 billion in 2017.[1]
  - Quantum Energy Partners VII was the largest fund raised during the year, securing commitments of $4.8 billion.
- At the end of 2018, there were roughly 93 funds in the market targeting an estimated $35.8 billion in capital, compared to 100 funds seeking an estimated $39.4 billion in 4Q 2017.[1]
  - NGP Natural Resources XII was seeking the most capital with a target fund size of $5.3 billion.
- Dry powder stood at $55.5 billion at the end of 2018, which was down 7.5% from 4Q 2017's level of $60.0 million and down from the five-year average level by 15.7%.[1]

Activity

- Energy and utilities industry managers completed 155 deals totaling $34.4 billion in 2018, compared to $36.9 billion across 130 deals in 2017.[1]
- Crude oil prices decreased during the year.
  - WTI crude oil prices decreased 14.4% during the year to $49.82 per bbl. This was also marked a decrease of 27.2% quarter-over-quarter.[11]
  - Brent crude oil prices ended the quarter at $57.36/bbl, down 20.9% and 10.9% from 3Q 2018 and 4Q 2017, respectively.[11]
- Natural gas prices (Henry Hub) finished 2018 at $4.04 per MMBtu, which was down 1.2% from 3Q 2018, but 43.3% higher from year-end 2017.[11]
- A total of 1,083 crude oil and natural gas rotary rigs were in operation in the U.S. at the end of 2018. This was up by 2.8% from the prior quarter and up 16.6% year-over-year.[15]
  - Crude oil rigs represented 81.7% of the total rigs in operation. 54.9% of the 885 active oil rigs were in the Permian basin.
  - 28.8% and 26.3% of natural gas rigs at the end of 2018 were operating in the Marcellus and Haynesville basins, respectively.
- The price of iron ore (Tianjin Port) ended the year at $69.15 per dry metric ton, up from $64.24 at year-end 2017.[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

(This page left blank intentionally)

Appendix B:

Real Estate Market Update

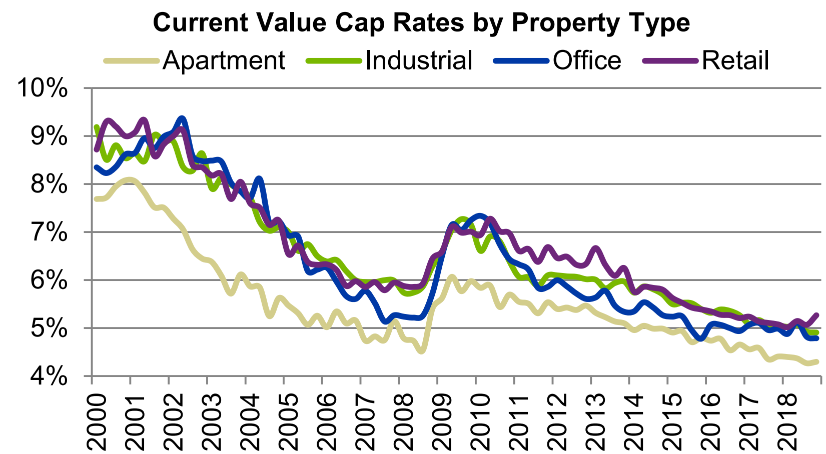
4Q 2018

United States Real Estate Market Update (4Q18)

General

- The S&P 500 produced a gross total return of -13.1% during the Quarter, as markets dropped from tightening monetary policy, weak PMI data, and trade war rhetoric. The MSCI US REIT index produced a return of -6.7%. Consumer Sentiment fell to 98.3 and has continued to deteriorate subsequent to quarter end.

- Macro indicators for U.S. real estate continue to be positive; GDP grew at an annualized rate of 2.6% in the Fourth Quarter and headline CPI rose by 2.2% YoY, above the Fed's 2% target. As of Quarter-end, the economy has now experienced 99 consecutive months of job growth. The Federal Reserve has continued to tighten monetary policy, with the effective federal funds rate reaching 24% at Quarter-end. Subsequent to Quarter end, the Fed took on a more cautious approach to additional monetary tightening.



Source: NCREIF

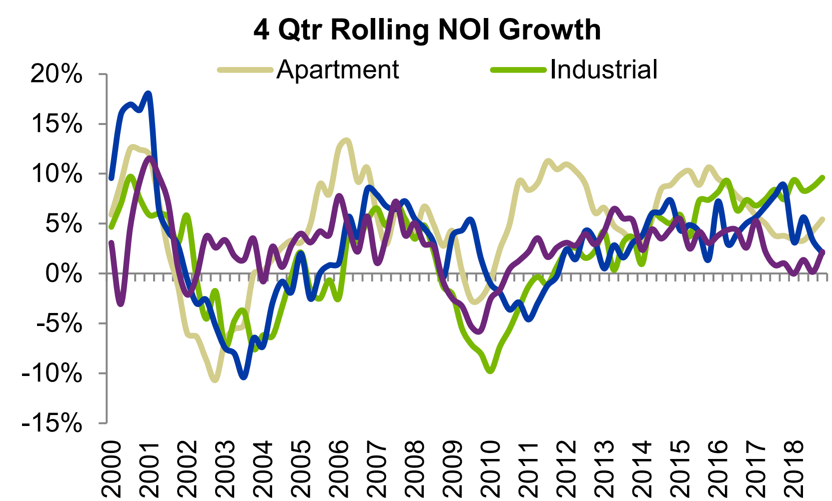
Commercial Real Estate

- Private real estate market carrying values remained flat over the quarter. Transaction cap rates (5.3%) compressed during the quarter. While, current valuation cap rates remained flat across property sectors, with the exception of the retail sector cap rates which expanded by 20 bps.

- NOI growth by sector continued to deviate during the Quarter, with the industrial sector continuing to outpace the other traditional property types. While industrial has faced increasing supply, it continues to benefit from outsized demand tailwinds (e-commerce and economic growth).

- In the Fourth Quarter of 2018, $30bn of aggregate capital was raised by Real Estate Funds. In 2018, Private Equity Real Estate Funds have raised $134.5bn which is on pace with the prior 5 years.

- 10-year treasury bond yields dropped 37 bps to 2.69% during the quarter, and, subsequent to quarter end, have remained anchored around 2.7%. A combination of expansionary fiscal policy and tightening monetary policy have led to increasing short-term interest rates and a flattening yield curve.



Source: NCREIF

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, Green Street

United States Property Matrix (4Q18)

TOWNSEND® GROUP
an Aon company

INDUSTRIAL

- As of 4Q18, industrial properties returned 3.4% and outperformed the NPI by 202 bps.
- Transaction volumes reached $780.2 billion for the year, marking a 23.8% year-over-year increase. Large-scale portfolio sales made 2018 the largest overall historic year in terms of total activity. With 42.5% of transactions over $150 million in size, it was an increasingly difficult year for investors trying to gain exposure.
- Annual Net absorption of 261.9 million sqft outpaced construction deliveries of 260.6 million sqft, basis. Absorption is beginning to slow as a result of limited availability, rather than overall demand for space.
- Vacancy remained stable at 4.9% , continuing to be at an all-time historic low. A asking rents continue to climb, but at a slower annual rate of 4.7%. Average asking rents have now increased 26.5% over the last five years.
- Logistics related occupiers accounted for 62% of leasing activity, up from 56% in 2016.

MULTIFAMILY

- The apartment sector delivered a 1.3% return during the Quarter, underperforming the NPI by 3 bps.
- Transaction volume for 2018 reached $167.5 billion, an increase of 15.1% year-over-year. The record breaking volume has made multifamily the most actively traded sector for the third straight year.
- Cross-border investment increased 29.3% for the year, reaching $14.9 billion. Despite this increase, private domestic buyers totaled $105.1 billion for the year, maintaining their designation as the largest share of acquisitions.
- Absorptions outpaced completions by 12.6%, causing vacancy to decline by 30 bps year-over-year to 4.6%. Increased demand has elevated rent growth to 4.2% on an annual basis.
- Deliveries have now decreased for five consecutive quarters, partially driven delays caused by labor shortages. This is forecasted to shift, with 2019 expected to deliver increased units and put pressure on supply-demand fundamentals in some markets.

OFFICE

- The office sector returned 1.6% in 4Q18, 27 bps above the NPI return over the period.
- Transaction volumes increased by 5.0% in 2018, driven by larger asset sales. Annual sales volumes totaled $132.0 billion for the year. Single asset transactions accounted for 78% of volume, the largest proportion over the past five years.
- Rental rates increased by 2.8% in 2018, with selective secondary markets experiencing growth as high as 12.0%. This was driven by a slight decrease in vacancy of 40 bps over the 12-month period.
- Investors are shifting attention to primary markets as they target lower risk markets with increased liquidity and longer-term hold assets that can endure through market cycles. Volumes in primary CBDs has increased 2.5% in 2018, while secondary markets have declined by 11.0% over the same period.
- Foreign investment declined by 5.2% in 2018, with increased activity in Europe, where borrowing costs have become more accommodative.

RETAIL

- As of 4Q18, the retail sector delivered a quarterly return of -0.4%, performing 181 bps below the NPI.
- Transaction volumes totaled $70.9 billion in 2018, driven by large entity-level transactions. Including these entity-level sales, annual sales growth increased 38.9%. Excluding the large portfolio sales, volume was down 18.0% year-over-year.
- Institutional investors continue to remain cautious, decreasing investment activity by 41.9% in 2018. Similarly, foreign investment decreased by 14.7% for a third consecutive year of declining investment.
- Despite the continued announcement of store closures, 12-month rental growth was 5.7%, largely driven by grocery-anchored centers. Growth is expected to slow heading into 2019.
- Absorption for the year totaled 16.8 million sqft, down 50.4% from 2017 as occupiers become increasing cautious with the overall footprint following numerous closures.

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

Global Real Estate Market Update (4Q18)

TOWNSEND® GROUP
an Aon company

- Global investment activity in 2018 exceeded expectations, with investment volumes reaching the highest levels since 2007. For the full year, the three most active cities were New York City, Los Angeles, and London, respectively.

- While investment volumes for the year were strong, there were signs of softening in the fourth quarter of 2018, with quarterly year-over-year investment and leasing volumes decreasing. This trend is expected to continue through 2019.

- Strong U.S. economic growth in 2018 bolstered its investment activity, with the fourth quarter 2018 being the strongest quarter since 2016..

Global Total Commercial Real Estate Volume - 2017 - 2018

$ US Billions	Q4 2018	Q4 2017	% Change Q4 18 - Q4 17	2018	2017	% Change 2018 - 2017
Americas	151	122	24%	512	441	16%
EMEA	106	139	-24%	325	365	-11%
Asia Pacific	216	274	-21%	847	822	3%
Total	473	535	-12%	1684	1629	3%

Source: Real Capital Analytics, Inc., Q4' 18

- In EMEA, transaction volumes declined year-over-year, mainly due to declines in the U.K. However, Germany showed strong fourth quarter growth, and smaller markets such as Belgium, Portugal, and Ireland all saw substantial increases during 2018.

- Year-over-year, Asia Pacific saw a moderate increase in transaction volumes, with South Korea being the strongest performer and recording over a 40% increase.

- In the office sector, global leasing markets were up 5% year-over-year, largely attributable to Asia Pacific which saw an increase of 21% in 2018. European leasing volumes were flat year-over-year, primarily driven by record-low vacancy rather than a lack of demand. Leasing in the U.S. office market continued to grow during 2018. Further, the global office vacancy rate was down to 11.4% by year-end 2018, which is the lowest of the current cycle. However, the global vacancy rate is expected to increase moderately over the next year.

- In the retail sector, retailers continue to focus efforts on appealing to changing consumer tastes, with an emphasis on entertainment and experiential retail centers. In the U.S. regional malls have continued to struggle, while developers focus in on live-work-play centers. In Europe, rents in the retail sector remained stable amidst declining consumer confidence and heightened uncertainty. Wage growth and lower inflation in the EU is expected to provide a stimulus for retail spending in 2019 and 2020. In Asia Pacific, experience-oriented retail continues to drive demand.

- The multifamily fundamentals during 2018 were solid in the U.S., with low vacancy rates and strong full-year absorption. Despite Brexit uncertainties, investment activity was high in the UK multifamily market, and volumes also increased during the year in Germany, the Netherlands, and Spain.

- The Industrial sector ended the year with record volumes, strong pre-leasing, and high rental growth which is expected to continue into 2019. These strong fundamentals and sector growth were evident across the U.S., Europe, and Asia Pacific.

Global Outlook - GDP (Real) Growth % pa, 2019-2021

	2019	2020	2021
Global	**3.4**	**3.4**	**3.0**
Asia Pacific	**4.7**	**4.6**	**-**
Australia	2.6	2.7	-
China	6.2	6.0	5.8
India	7.2	7.3	7.4
Japan	0.8	0.5	-
North America	**2.4**	**1.9**	**1.8**
US	2.5	1.9	1.8
MENA*	**3.0**	**3.1**	**-**
European Union	**1.6**	**1.7**	**-**
France	1.3	1.4	-
Germany	1.2	1.5	-
UK	1.4	1.5	1.7

*Middle East North Africa

Source: Bloomberg

Note: 2021 projections are not yet available for certain regions

Sources: Jones Lang LaSalle Research, Real Capital Analytics, Inc.

This page intentionally left blank.

TAB G

Report

Meketa Investment
Market Risk Metrics

This page intentionally left blank.

Investment Market Risk Metrics

Monthly Report

April 2019
(as of 3/31/19)

M E K E T A   I N V E S T M E N T   G R O U P

BOSTON MASSACHUSETTS | CHICAGO ILLINOIS | MIAMI FLORIDA | NEW YORK NEW YORK | PORTLAND OREGON | SAN DIEGO CALIFORNIA | LONDON UNITED KINGDOM

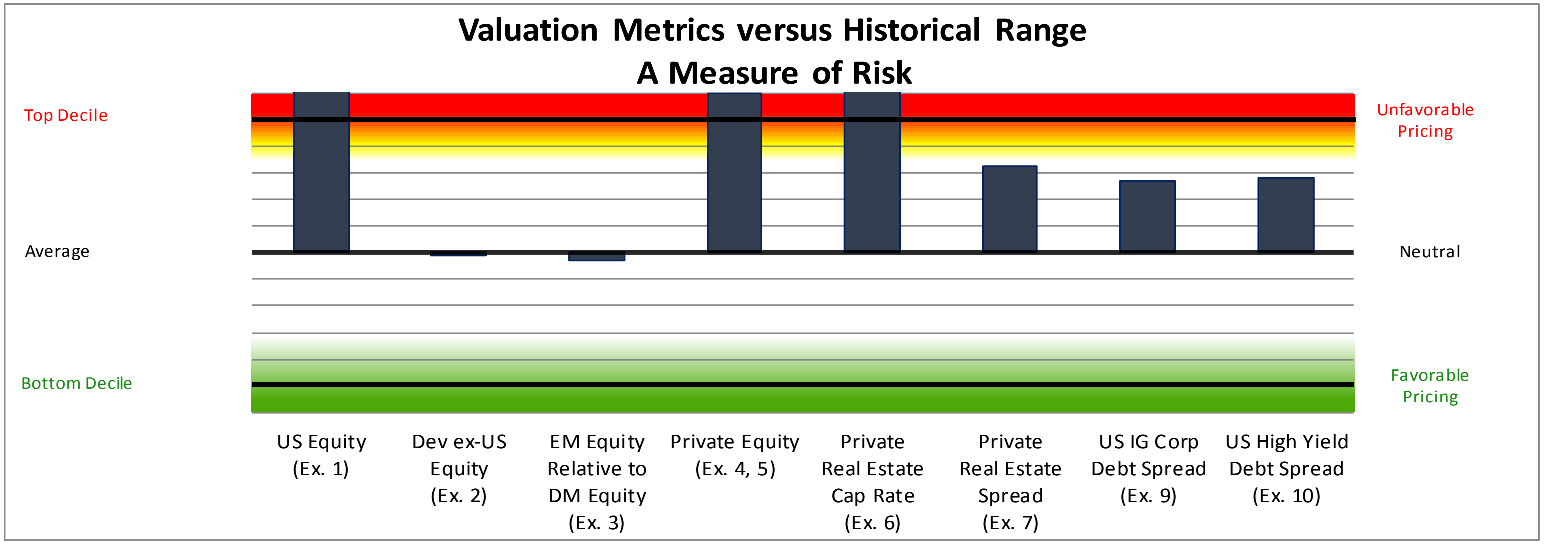
www.meketagroup.com

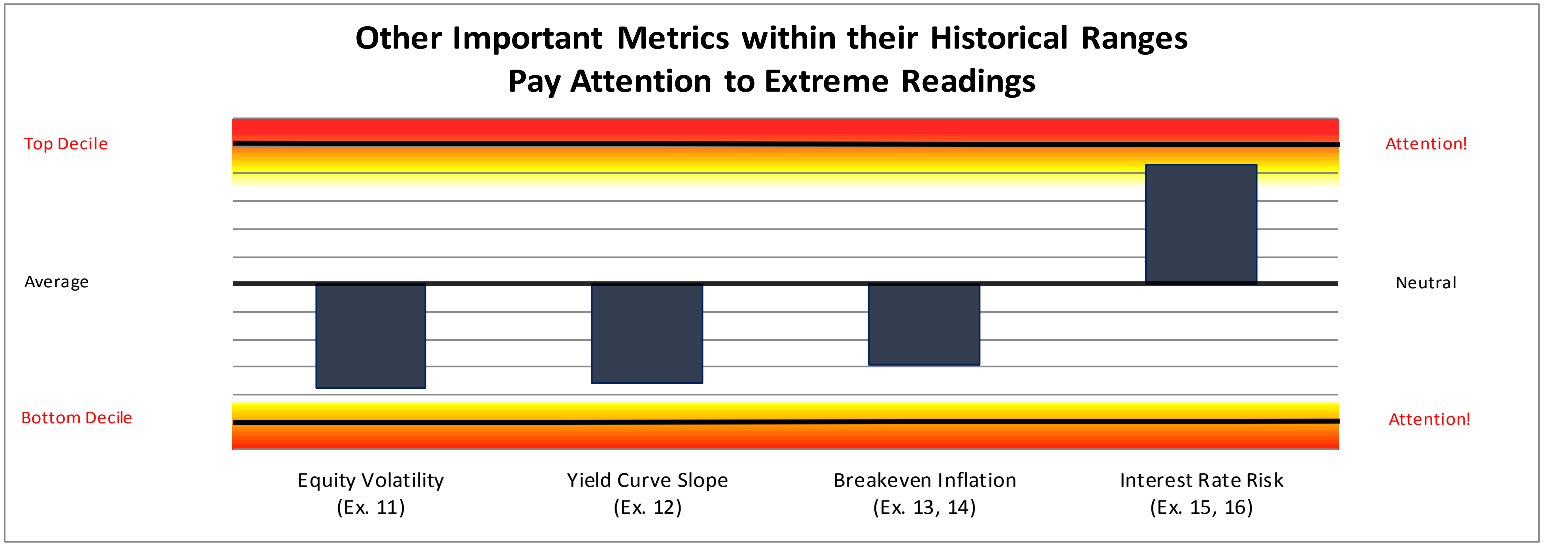
Takeaways

- Although March was a relatively muted period for most asset classes, the month capped off a historically strong quarter for most risk-based assets. Across the globe, the strong returns for broad equity markets in Q1 2019 effectively nullified the material drawdowns seen in Q4 2018. During the quarter, U.S. equity markets outperformed Non-U.S. markets, with most U.S. indices producing returns in the low-to-mid teens.
- Due to the strong rebound in public market risk-based assets to start 2019, private market assets are likely to show only a modest impact from the volatile trailing six-month period.
- U.S. equity markets remain expensive whereas Non-U.S. equity markets remain reasonably valued.
- The U.S. yield curve continued to flatten during March, with intermediate and long rates compressing by roughly 20-30 bps over the month. The yield curve is currently at its flattest point since the Great Financial Crisis.
- Implied equity market volatility decreased during March, as the VIX Index finished the month meaningfully below the long-term historical average.
- The Market Sentiment Indicator[1] (page 3) remained neutral (gray).
- **Market uncertainty is higher than numbers might indicate**. Diverging global economic growth, nuanced monetary policies, and ongoing geopolitical turmoil has resulted in increased uncertainty in the global capital markets. Moreover, equity and credit markets are currently producing different macroeconomic signals when compared to sovereign bond markets.

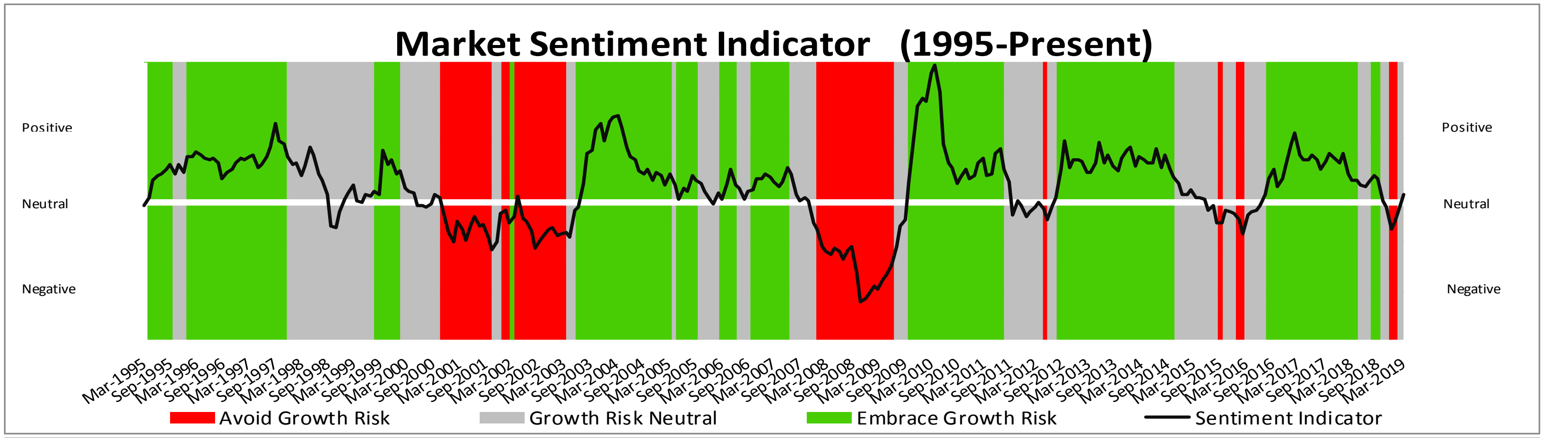
[1] See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

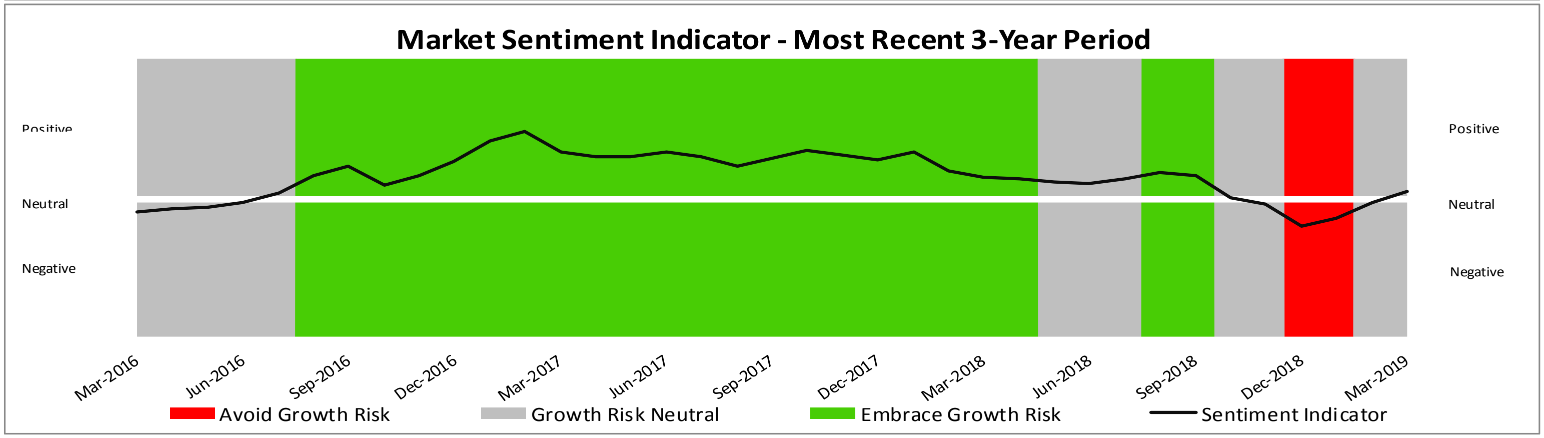
Risk Overview





Market Sentiment





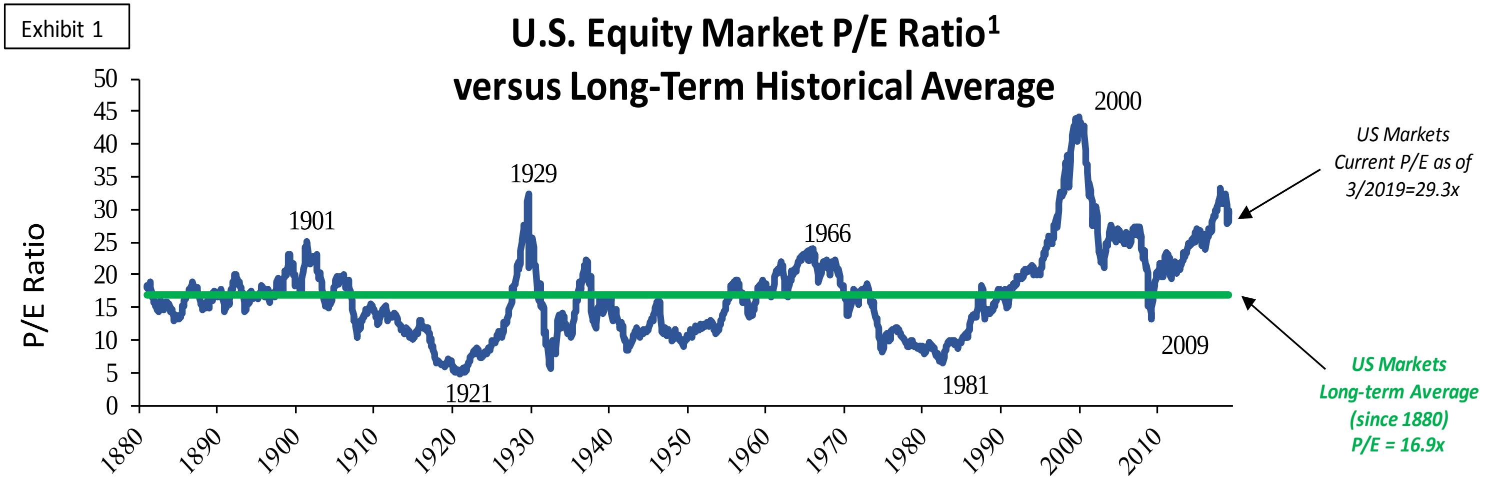
Information Behind Current Sentiment Reading

Bond Spread Momentum Trailing-Twelve Months	Negative
Equity Return Momentum Trailing-Twelve Months	Positive
Agreement Between Bond Spread and Equity Spread Momentum Measures?	Disagree

Growth Risk Visibility (Current Overall Sentiment)	**Neutral**

Developed Public Equity Markets

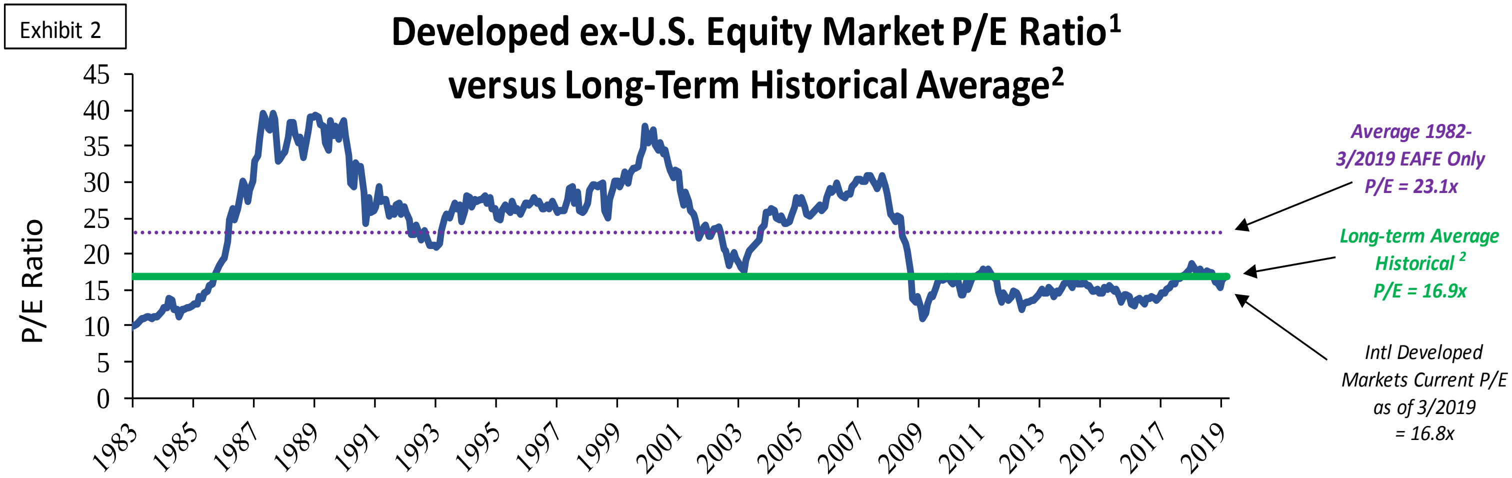
Exhibit 1



[1] P/E ratio is a Shiller P/E-10 based on 10 year real S&P 500 earnings over S&P 500 index level.

(Please note different time scales)

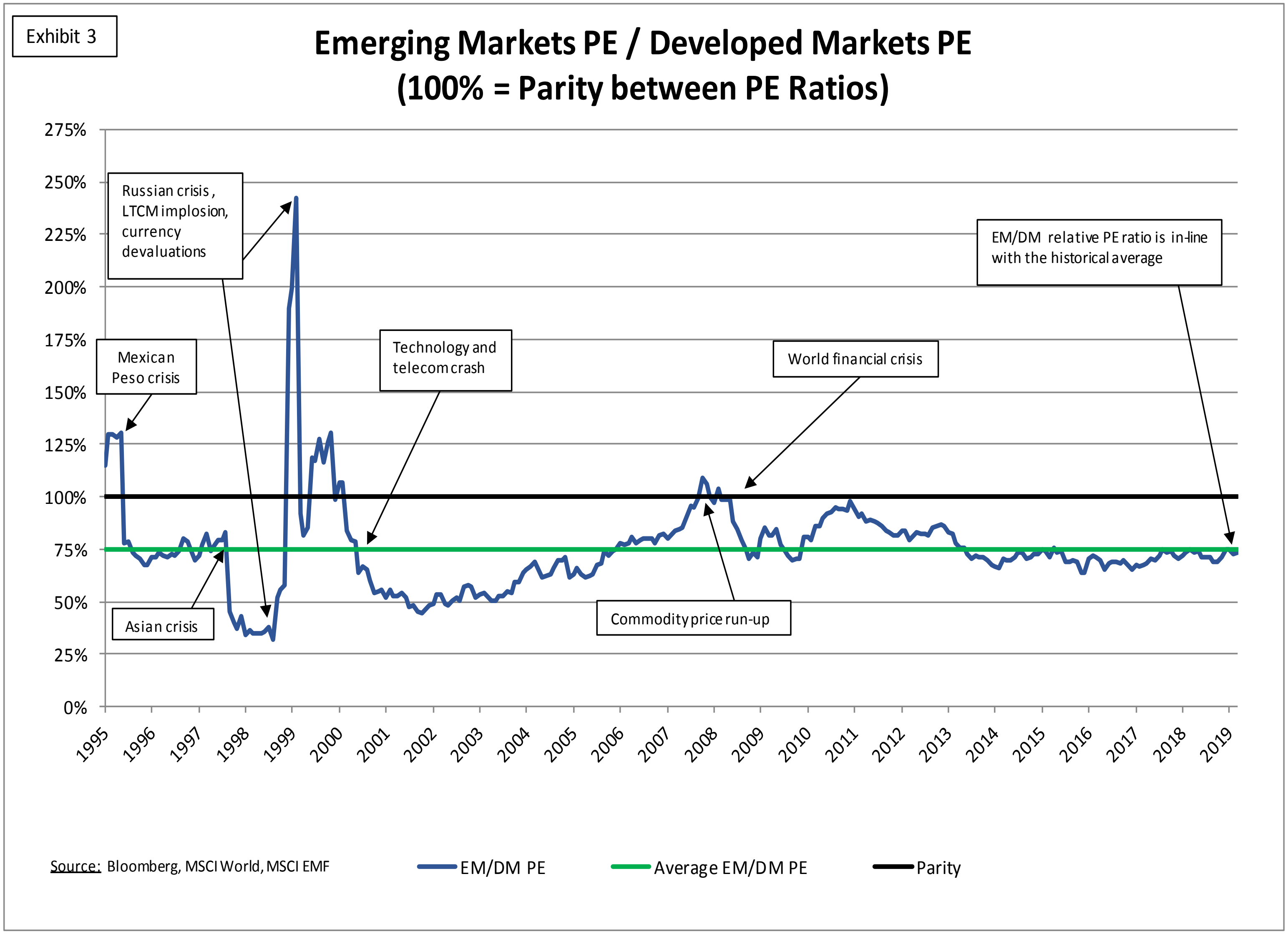
Exhibit 2



[1] P/E ratio is a Shiller P/E-10 based on 10 year real MSCI EAFE earnings over EAFE index level.

[2] To calculate the LT historical average, from 1881 to 1982 U.S. data is used as developed market proxy. From 1982 to present, actual developed ex-US market data (MSCI EAFE) is used.

Emerging Market Public Equity Markets

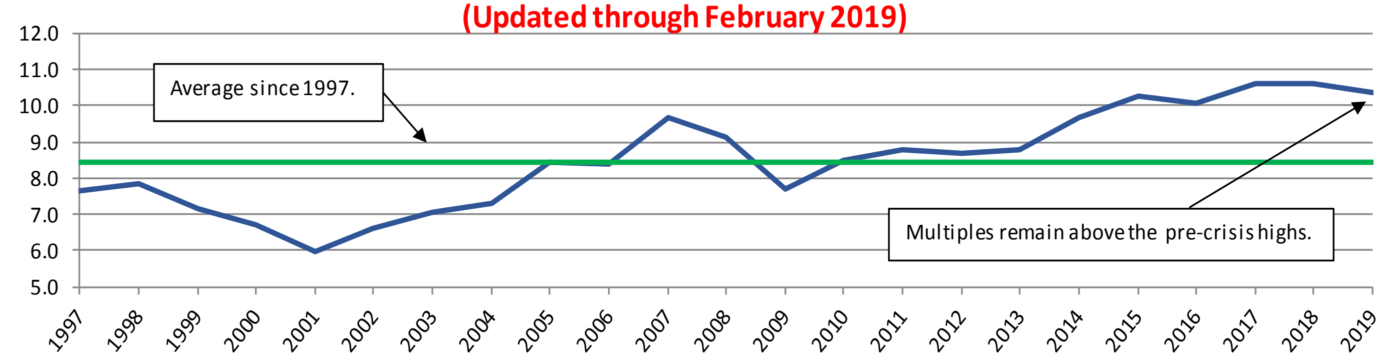


Private Equity

Exhibit 4

Price to EBITDA Multiples Paid in LBOs

(Updated through February 2019)



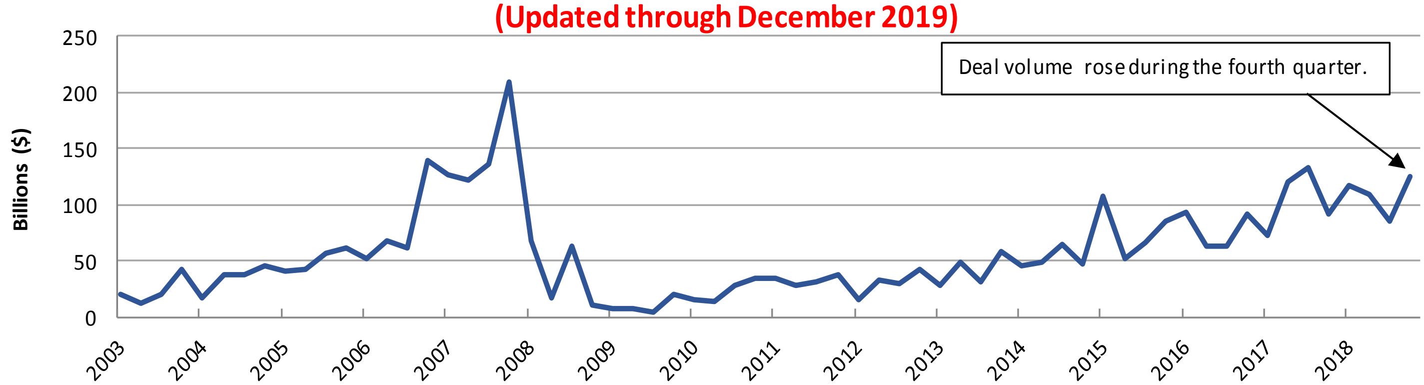
Source: S&P LCD study

(Please note different time scales)

Exhibit 5

Disclosed U.S. Quarterly Deal Volume*

(Updated through December 2019)



Source: Thomson Reuters Buyouts

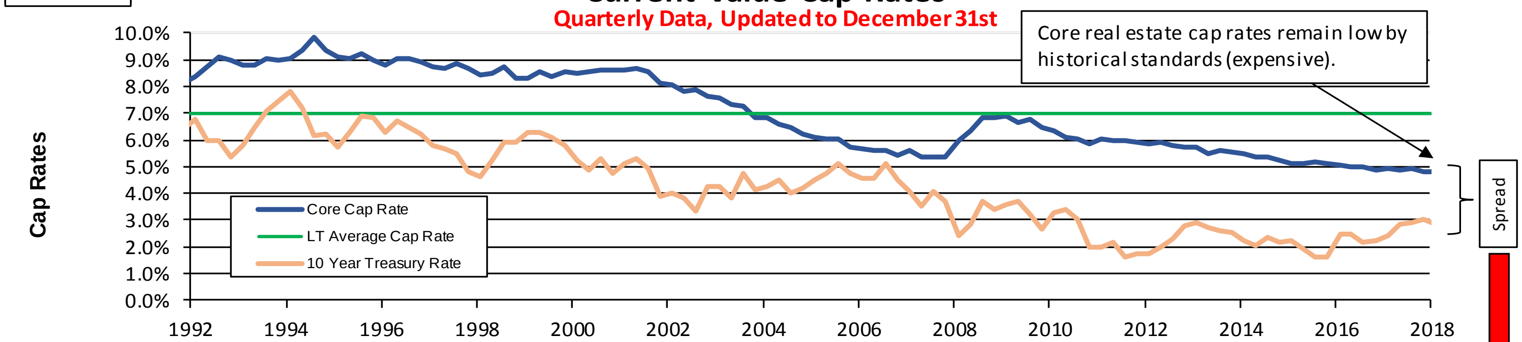
* quarterly total deal size (both equity and debt)

Private Real Estate

Exhibit 6

Current Value Cap Rates[1]

Quarterly Data, Updated to December 31st



Source: NCRIEF

[1]A cap rate is the current annual income of the property divided by an estimate of the current value of the property. It is the current yield of the property. Low cap rates indicate high valuations.

Exhibit 7

Core Cap Rate Spread over 10-Year Treasury Interest Rate

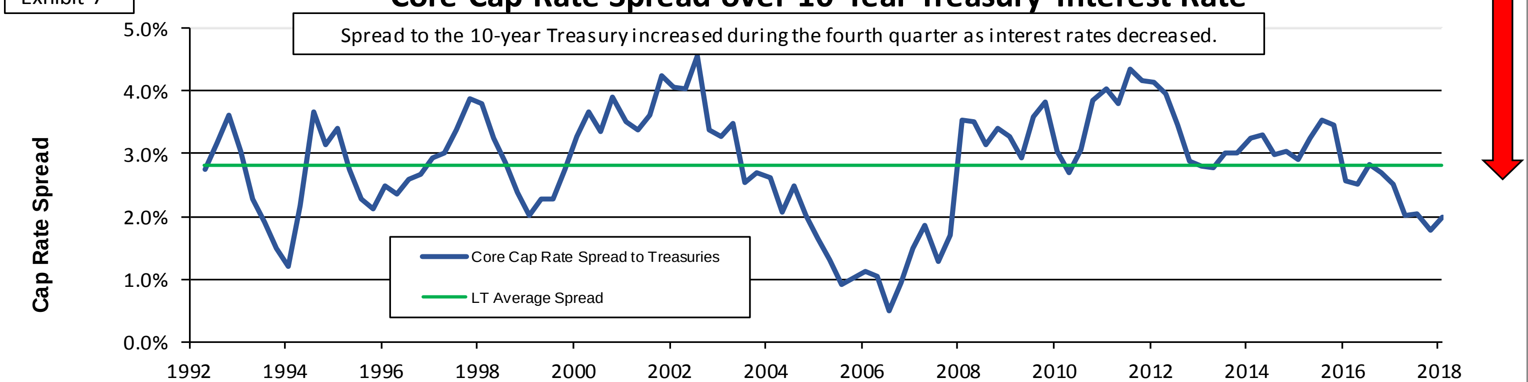
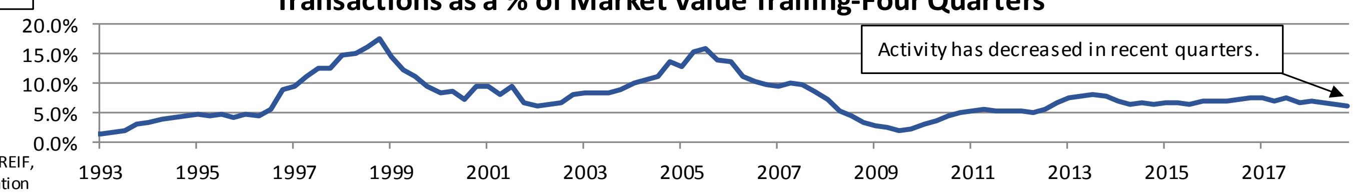


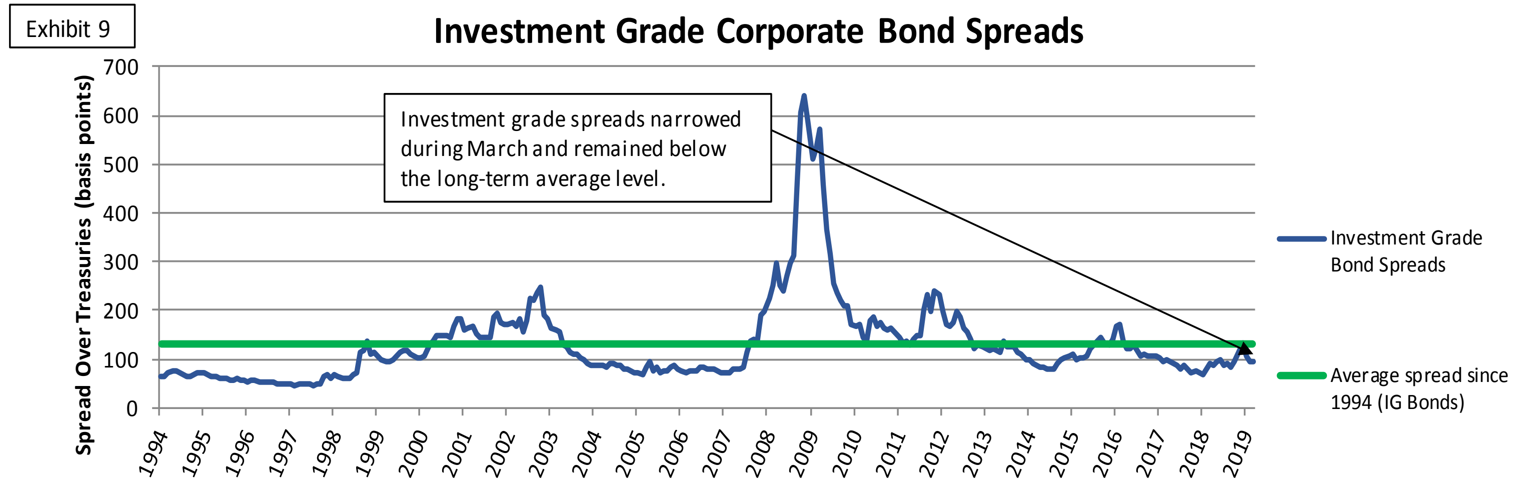
Exhibit 8

Transactions as a % of Market Value Trailing-Four Quarters

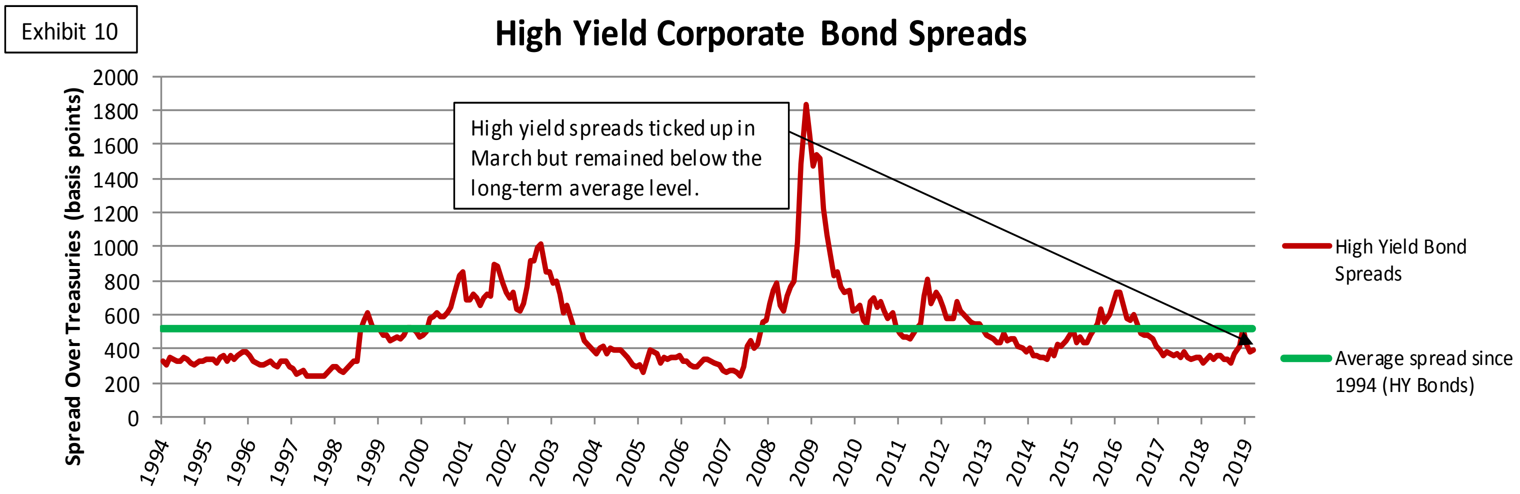


Source: NCREIF, MIG calculation

Credit Market U.S. Fixed Income



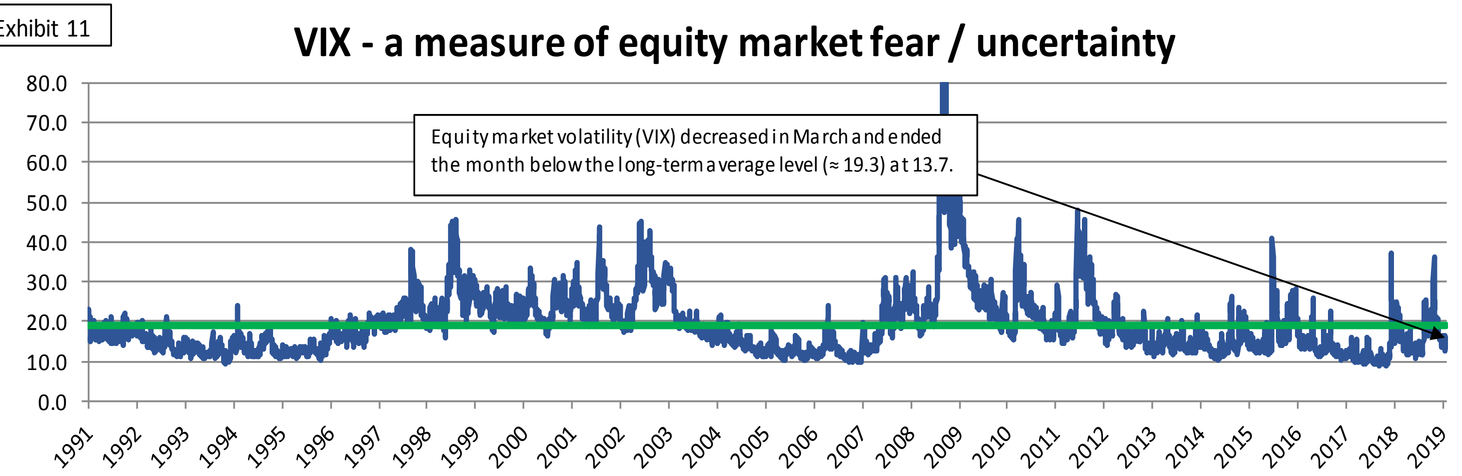
Source: LehmanLive: Barclays Capital US Corporate Investment Grade Index Intermediate Component.



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

Other Market Metrics

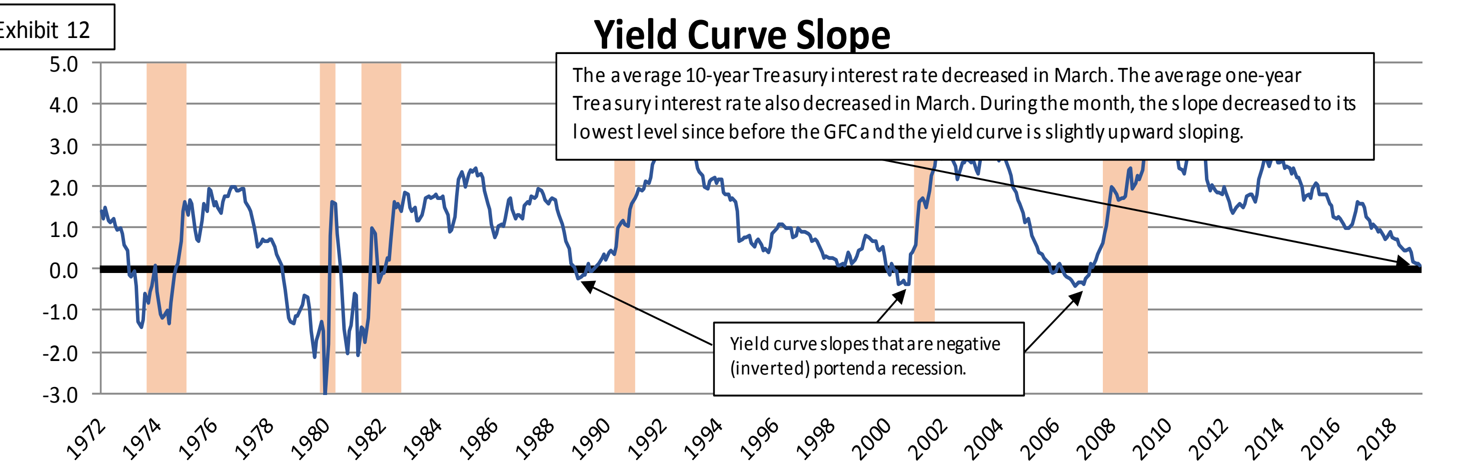
Exhibit 11



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

(Please note different time scales)

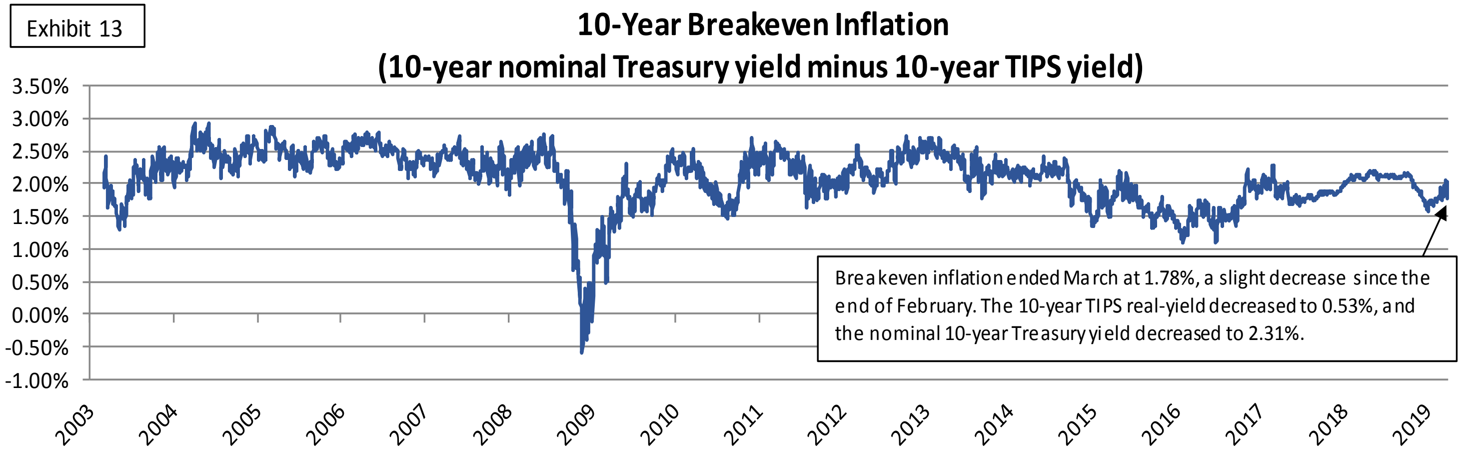
Exhibit 12



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

Measures of Inflation Expectations

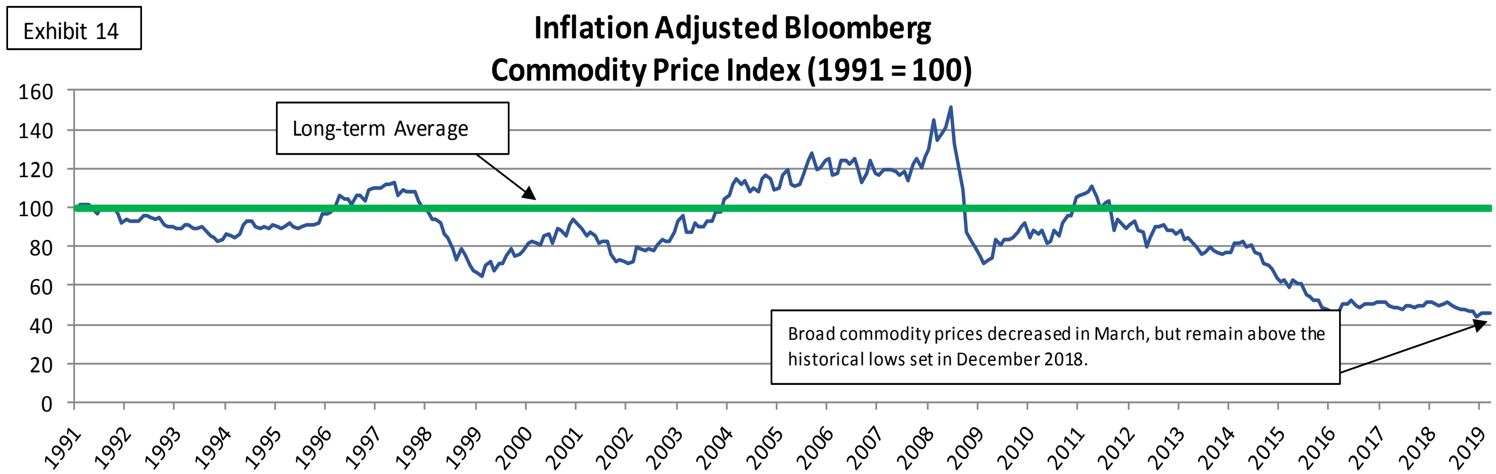
Exhibit 13



Source: www.ustreas.gov
Daily Yield Curve Rates (10-year nominal treasury yield minus 10-year TIPs yield)

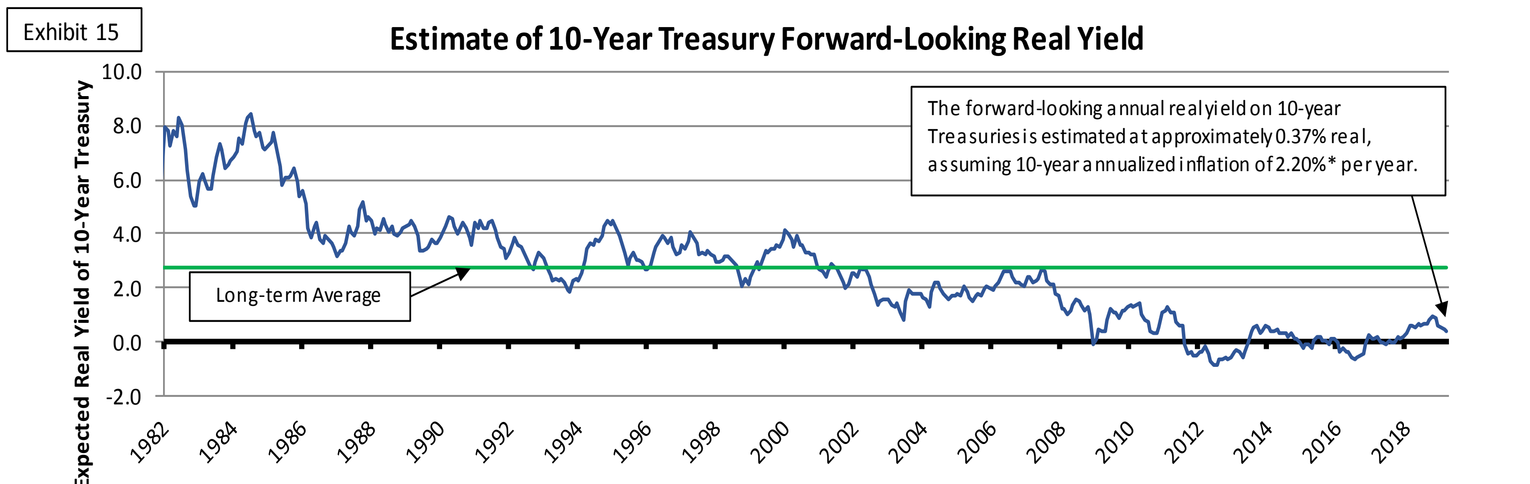
(Please note different time scales)

Exhibit 14

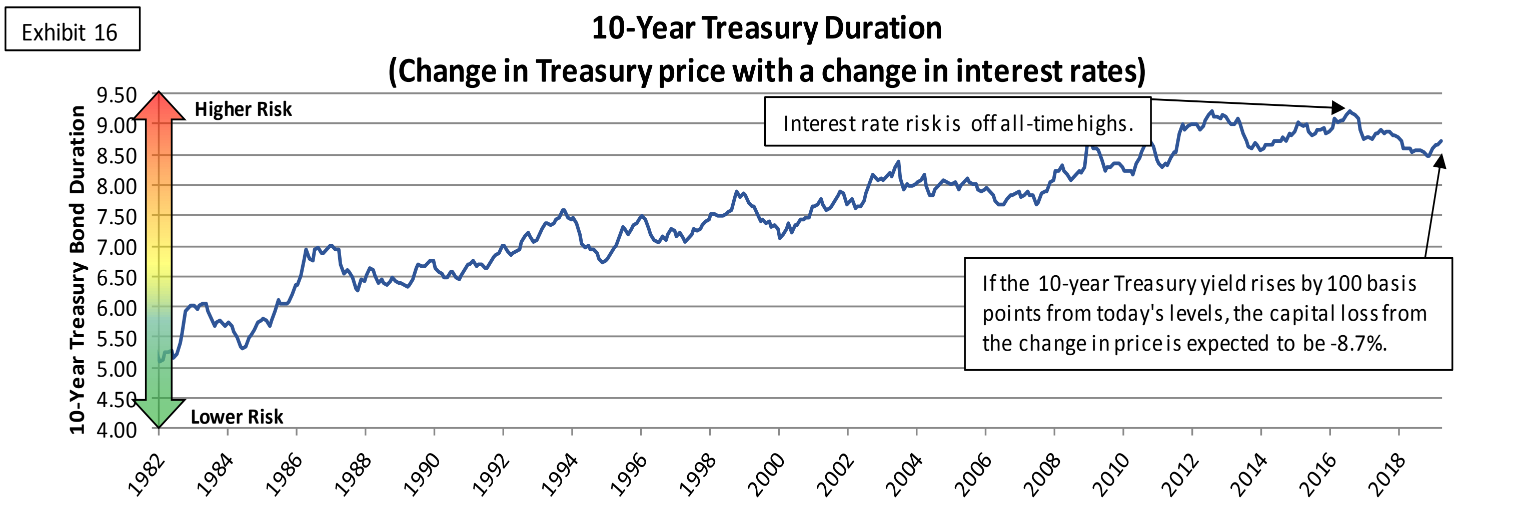


Source: Bloomberg Commodity Index, St. Louis Fed for US CPI all urban consumers.

Measures of U.S. 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



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

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.

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.

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 certainly of receiving their nominal cash flows. MIG 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.

Meketa Market Sentiment Indicator

Explanation, Construction and Q&A

Meketa has created the Market Sentiment Indicator (MSI) to complement our valuation-focused Meketa 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 Market Sentiment Indicator (MSI)?
- How do I read the indicator graph?
- How is the Market Sentiment Indicator (MSI) constructed?
- What do changes in the indicator mean?

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

Meketa'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 MSI 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 MSI 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, Meketa believes the Risk Metrics and MSI 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 Meketa MSI:

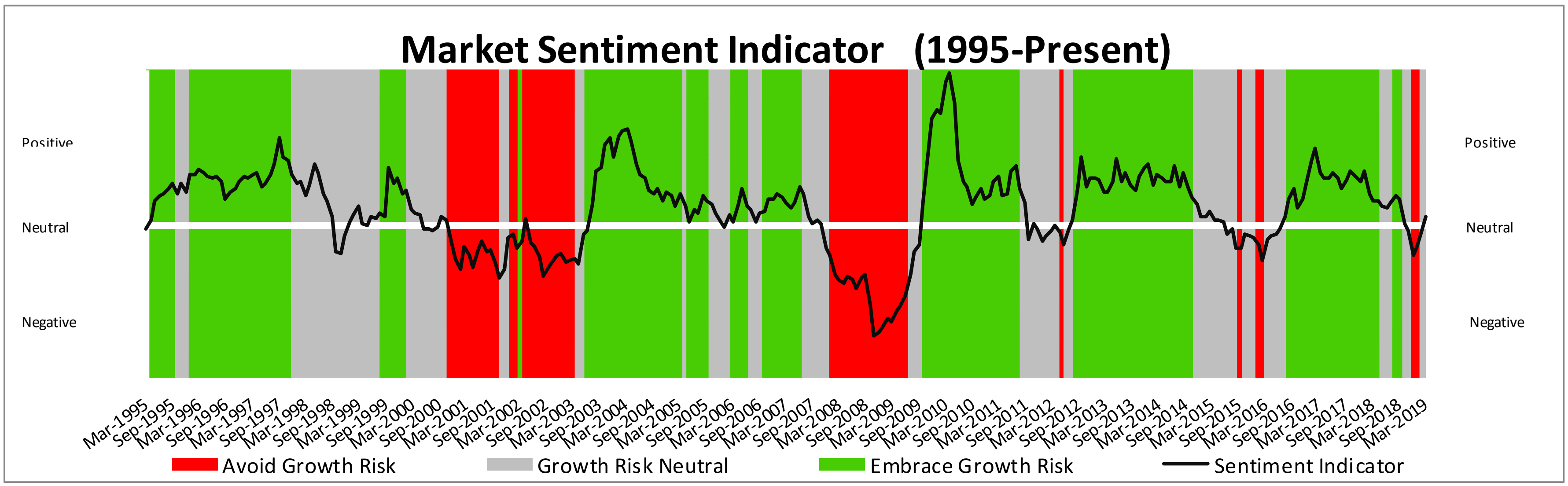
What is the Market Sentiment Indicator (MSI)?

The MSI 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 MSI 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 Market Sentiment Indicator (MSI) graph?

Simply put, the MSI 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 MSI 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 MSI. 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.



How is the Market Sentiment Indicator (MSI) Constructed?

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

- Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
- 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[1]. The color reading on the graph is determined as follows:

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

[1] 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

What does the Market Sentiment Indicator (MSI) 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 MSI 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.

TAB H

Report

Comprehensive Performance Report

March 31, 2019

This page intentionally left blank.

Comprehensive Performance Report

March 31, 2019

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

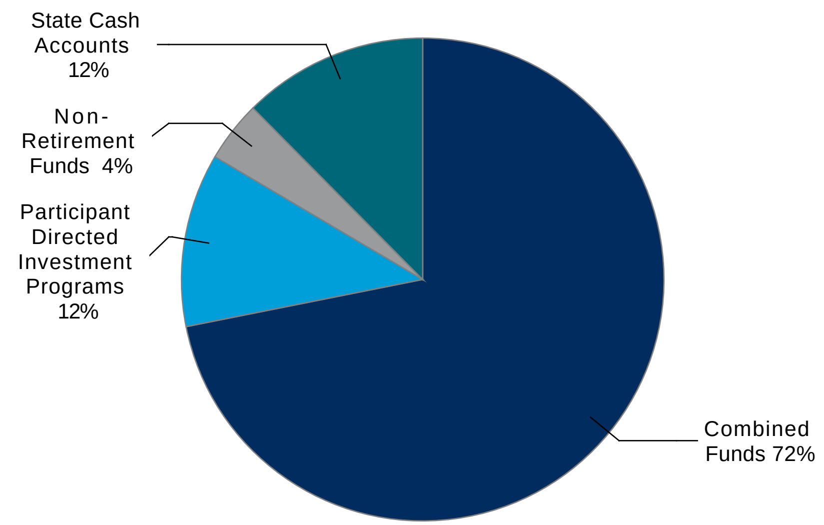
The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

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

	$ Millions
COMBINED FUNDS	
Combined Funds	$68,816
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	3,856
State Deferred Compensation Plan**	5,818
Minnesota College Savings Plan	1,448
Achieve a Better Life Experience	5
NON-RETIREMENT FUNDS	
Assigned Risk Plan	282
Permanent School Fund	1,463
Environmental Trust Fund	1,172
Closed Landfill Investment Fund	93
Miscellaneous	248
Ohter Post Employment Benefits Accounts	653
STATE CASH ACCOUNTS	
Treasurer's Cash	11,591
Other State Cash Accounts	306
TOTAL	
SBI AUM	95,752



* 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

STATE STREET.

Quarterly Report

Table of Contents

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 becuase of portfolio management decisions to group managers in different aggregates over time.

STATE STREET

Combined Funds

March 31, 2019

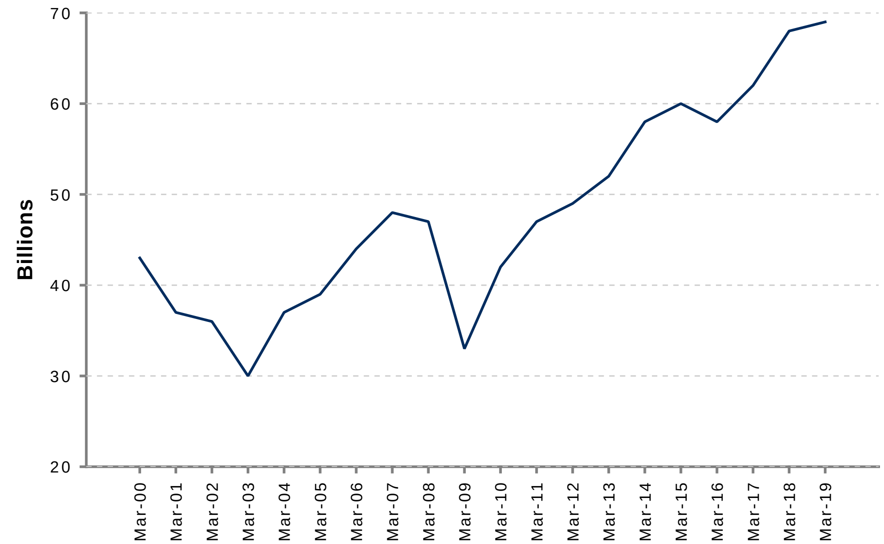
Combined Funds Summary

Combined Funds Change in Market Value ($Millions)

	One Quarter
COMBINED FUNDS	
Beginning Market Value	$64,107
Net Contributions	-667
Investment Return	5,376
Ending Market Value	68,816

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

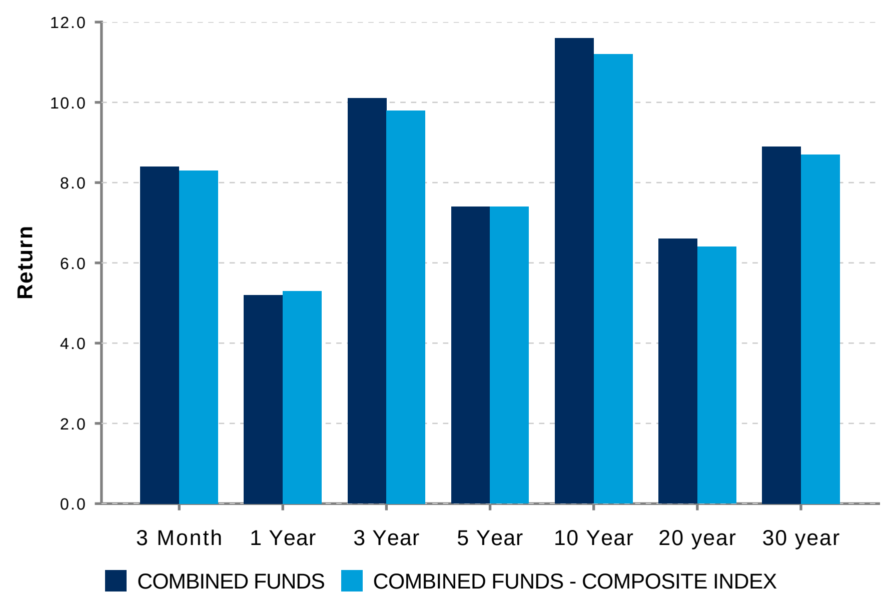
Asset Growth



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.

	Qtr	FYTD	1 Yr	3 Yr	5 Yr	10 Yr	20 Yr	30 Yr
COMBINED FUNDS	8.4%	3.6%	5.2%	10.1%	7.4%	11.6%	6.6%	8.9%
COMBINED FUNDS - COMPOSITE INDEX	8.3	3.8	5.3	9.8	7.4	11.2	6.4	8.7
Excess	0.2	-0.2	-0.1	0.3	0.0	0.5	0.2	0.3

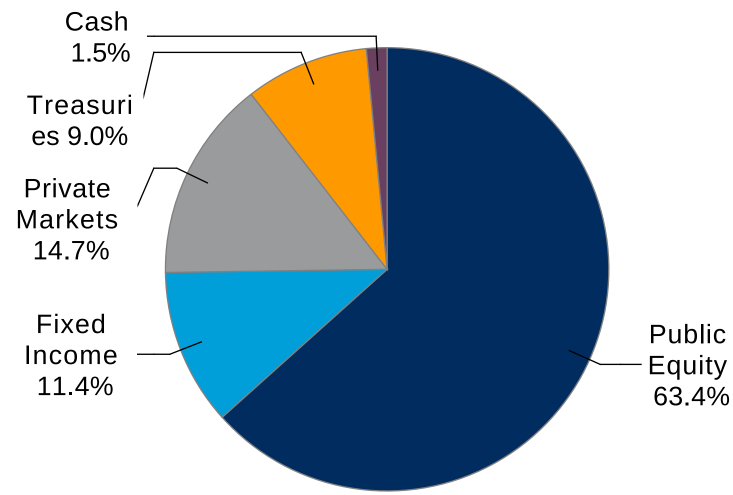


Combined Funds Summary

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.

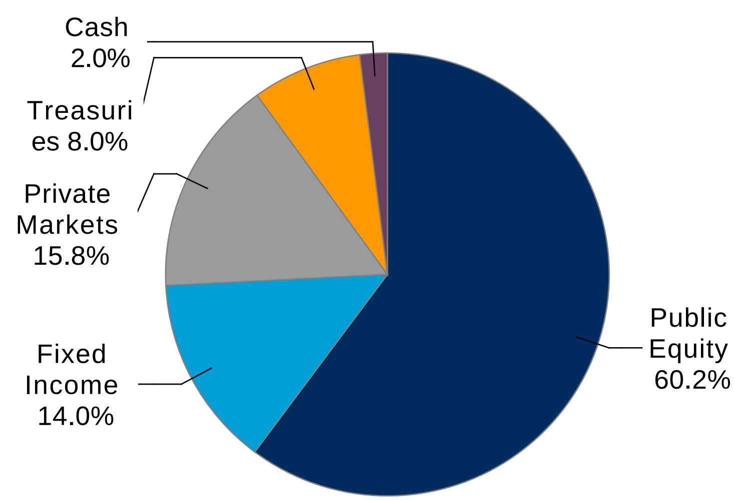
	(Millions)	Actual Mix	Policy Target
Public Equity	$43,594	63.3%	53.0%
Fixed Income	7,870	11.4	12.0
Private Markets	10,088	14.7	25.0
Treasuries	6,203	9.0	8.0
Cash	1,060	1.5	2.0
TOTAL	68,816	100.0	



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.

	Policy Weight	Benchmark
Public Equity	60.2%	Public Equity Benchmark
Fixed Income	14.0	BB Barclays U.S. Aggregate
Private Markets	15.8	Private Markets
Treasuries	8.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills



Combined Funds Asset Class Performance Summary

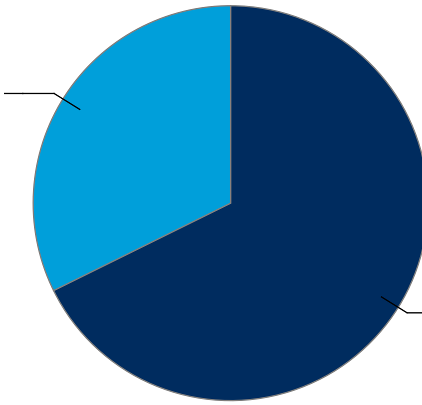
Public Equity

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

The Public Equity benchmark is 60.3% Russell 1000, 6.7% Russell 2000, 24.75% MSCI World ex US (net), and 8.25% MSCI EM (net).

The Russell 1000 and Russell 2000 measure the performance of the 1000 largest and 2000 next largest U.S. companies based on total market capitalization.

The MSCI World ex US index is composed of large and mid cap companies that capture apporximately 85% of the total market capitalization in 22 of the 23 developed markets. The MSCI Emerging Markets index is composed of large and mid cap companies that capture apporximately 85% of the total market capitalization across 24 Emergin Markets countries.



	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Public Equity	13.1%	2.2%	4.2%	11.9%	8.1%	14.3%	5.9%	9.3%
Public Equity Benchmark	12.8	2.7	4.4					
Excess	0.2	-0.5	-0.2					
Domestic Equity	14.2	4.2	8.5	13.6	10.1	16.0	6.2	9.8
Domestic Equity Benchmark	14.1	4.7	8.8	13.5	10.4	16.0	6.3	9.9
Excess	0.2	-0.5	-0.3	0.1	-0.3	0.0	-0.1	-0.2
International Equity	10.5	-2.1	-4.4	7.9	2.9	9.3	4.9	
International Equity Benchmark	10.3	-1.6	-4.2	8.1	2.6	8.9	4.5	
Excess	0.2	-0.4	-0.2	-0.2	0.3	0.4	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.

STATE STREET.

Combined Funds Asset Class Performance Summary

Fixed Income

The Combined Funds Fixed Income program includes Core Fixed Income and Treasuries. The Combined Funds performance for these asset classes is shown here.

The Core 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.

The Treasuries benchmark is the Bloomberg Barclays Treasury 5+ Years Index.

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Fixed Income	3.4%	4.9%	4.9%	2.7%	3.2%	5.2%	5.1%	6.5%
Fixed Income Benchmark	2.9	4.6	4.5	2.0	2.7	3.8	4.7	6.2
Excess	0.5	0.2	0.4	0.7	0.4	1.4	0.4	0.3
Treasuries	3.4	5.5	5.5					
BBG BARC 5Y + Us Tsy Idx	3.3	5.6	5.7					
Excess	0.0	-0.1	-0.2					

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.

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Cash	0.6%	1.7%	2.2%	1.3%	0.9%	0.7%	2.3%	3.8%
90 DAY T-BILL	0.6	1.7	2.1	1.2	0.7	0.4	1.9	3.1

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

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	25 year	30 year
Private Markets	-0.6%	7.4%	9.9%	13.7%	10.8%	11.3%	12.7%	13.4%	12.1%
Private Equity	0.0%	9.0%	11.7%	16.2%	14.3%	14.8%	13.5%	15.0%	
Private Credit	1.7	8.6	13.3	15.0	13.4	12.5	12.6		
Resources	-3.8	3.5	4.3	7.9	-0.5	5.1	16.3	14.8	
Real Estate	0.7	5.8	8.6	9.4	12.1	6.5	8.8	9.4	

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.

Asset Class & Manager Performance
March 31, 2019

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.

This page intentionally left blank.

Domestic Equity

March 31, 2019

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total Domestic Equity										
ACTIVE DOMESTIC EQUITY AGGREGATE (1)	**$4,467,368,170**	**14.5%**	**15.6%**	**-0.8%**	**6.1%**	**14.1%**	**9.1%**	**15.8%**		
Active Domestic Equity Benchmark			14.1	-0.1	5.6	12.6	9.3	15.6		
Excess			1.6	-0.7	0.4	1.5	-0.1	0.2		
SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)	**2,374,447,897**	**7.7**	**13.6**	**5.1**	**8.6**	**13.3**	**10.5**	**16.2**		
Semi Passive Domestic Equity Benchmark			14.0	5.5	9.3	13.5	10.6	16.0		
Excess			-0.4	-0.4	-0.7	-0.2	-0.1	0.1		
PASSIVE DOMESTIC EQUITY AGGREGATE (3)	**23,891,815,801**	**77.7**	**14.0**	**5.2**	**9.0**	**13.6**	**10.4**	**16.0**		
Passive Domestic Equity Benchmark			14.0	5.2	9.1	13.6	10.4	16.0		
Excess			0.0	-0.0	-0.0	-0.1	-0.0	-0.0		
TRANSITION AGGREGATE DOMESTIC EQUITY (4)	25,860	0.0								
TOTAL DOMESTIC EQUITY (5)	**30,733,657,728**	**100.0**	**14.3**	**4.2**	**8.5**	**13.6**	**10.1**	**16.0**	**10.4**	**01/1984**
Domestic Equity Benchmark			14.1	4.7	8.8	13.5	10.4	16.0	10.6	01/1984
Excess			0.2	-0.5	-0.3	0.1	-0.3	-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, Russell 2000 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 90% Russell 1000 and 10% Russell 2000.

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

STATE STREET

Minnesota State Board of Investment
Quarter Ending March 31, 2019
Domestic Equity Managers

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Total Domestic Equity					
ACTIVE DOMESTIC EQUITY AGGREGATE (1)	**-6.5%**	**20.6%**	**10.9%**	**-0.4%**	**9.3%**
Active Domestic Equity Benchmark	-8.0	18.3	15.7	-0.6	11.0
Excess	1.4	2.3	-4.8	0.3	-1.7
SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)	**-4.9**	**22.5**	**11.1**	**0.5**	**14.2**
Semi Passive Domestic Equity Benchmark	-4.8	21.7	12.1	0.9	13.2
Excess	-0.1	0.8	-1.0	-0.4	1.0
PASSIVE DOMESTIC EQUITY AGGREGATE (3)	**-5.0**	**21.3**	**12.6**	**0.5**	**12.6**
Passive Domestic Equity Benchmark	-5.0	21.5	12.5	0.5	12.6
Excess	-0.0	-0.2	0.1	0.0	0.0
TRANSITION AGGREGATE DOMESTIC EQUITY (4)					
TOTAL DOMESTIC EQUITY (5)	**-5.3%**	**21.4%**	**11.5**	**0.3**	**12.3**
Domestic Equity Benchmark	-5.2%	21.1%	12.7	0.5	12.6
Excess	-0.0%	0.2%	-1.3	-0.2	-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, Russell 2000 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 90% Russell 1000 and 10% Russell 2000.

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

STATE STREET.

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Large Cap Growth										
SANDS	**$475,909,162**	**1.5%**	**22.3%**	**7.9%**	**19.4%**	**22.2%**	**13.0%**	**21.4%**	**11.5%**	**01/2005**
Russell 1000 Growth			16.1	6.6	12.7	16.5	13.5	17.5	9.8	01/2005
Excess			6.2	1.2	6.7	5.6	-0.5	3.9	1.7	
WINSLOW	**257,777,490**	**0.8**	**17.7**	**7.3**	**15.4**	**19.3**	**13.9**	**17.2**	**10.8**	**01/2005**
Russell 1000 Growth			16.1	6.6	12.7	16.5	13.5	17.5	9.8	01/2005
Excess			1.6	0.7	2.7	2.7	0.4	-0.3	1.0	
ZEVENBERGEN	**421,530,837**	**1.4**	**27.5**	**4.8**	**19.7**	**23.8**	**13.5**	**19.2**	**11.1**	**04/1994**
Russell 1000 Growth			16.1	6.6	12.7	16.5	13.5	17.5	9.7	04/1994
Excess			11.4	-1.8	7.0	7.3	-0.0	1.7	1.3	
RUSSELL 1000 GROWTH AGGREGATE	**1,155,217,489**	**3.8**	**23.4**	**6.5**	**18.8**	**22.1**	**14.7**	**19.2**		
Russell 1000 Growth			16.1	6.6	12.7	16.5	13.5	17.5		
Excess			7.3	-0.2	6.0	5.6	1.2	1.6		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Active Large Cap Growth					
SANDS	**7.0%**	**35.3%**	**-6.9%**	**2.9%**	**9.1%**
Russell 1000 Growth	-1.5	30.2	7.1	5.7	13.0
Excess	8.6	5.1	-13.9	-2.8	-3.9
WINSLOW	**4.2**	**33.2**	**-1.9**	**6.7**	**11.0**
Russell 1000 Growth	-1.5	30.2	7.1	5.7	13.0
Excess	5.7	3.0	-9.0	1.0	-2.0
ZEVENBERGEN	**2.3**	**35.1**	**-2.8**	**6.4**	**3.4**
Russell 1000 Growth	-1.5	30.2	7.1	5.7	13.0
Excess	3.8	4.9	-9.9	0.7	-9.6
RUSSELL 1000 GROWTH AGGREGATE	**4.7%**	**33.4%**	**1.0**	**4.6**	**9.6**
Russell 1000 Growth	-1.5%	30.2%	7.1	5.7	13.0
Excess	6.2%	3.2%	-6.1	-1.1	-3.4

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Large Cap Value										
BARROW HANLEY	**$394,803,783**	**1.3%**	**9.8%**	**3.3%**	**6.7%**	**10.2%**	**7.4%**	**14.2%**	**7.8%**	**04/2004**
Russell 1000 Value			11.9	4.4	5.7	10.5	7.7	14.5	7.6	04/2004
Excess			-2.1	-1.2	1.0	-0.3	-0.4	-0.4	0.2	
EARNEST PARTNERS	**286,544,331**	**0.9**	**13.6**	**5.0**	**6.4**	**13.7**	**9.7**	**14.5**	**7.0**	**07/2000**
Russell 1000 Value			11.9	4.4	5.7	10.5	7.7	14.5	7.1	07/2000
Excess			1.7	0.5	0.7	3.3	2.0	0.0	-0.1	
LSV	**377,745,926**	**1.2**	**11.7**	**-0.1**	**-0.0**	**11.0**	**8.0**	**15.8**	**8.7**	**04/2004**
Russell 1000 Value			11.9	4.4	5.7	10.5	7.7	14.5	7.6	04/2004
Excess			-0.3	-4.5	-5.7	0.6	0.3	1.3	1.1	
RUSSELL 1000 VALUE AGGREGATE	**1,059,094,040**	**3.4**	**11.5**	**2.4**	**4.0**	**11.6**	**7.9**	**14.6**		
Russell 1000 Value			11.9	4.4	5.7	10.5	7.7	14.5		
Excess			-0.4	-2.0	-1.7	1.2	0.2	0.1		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Active Large Cap Value					
BARROW HANLEY	**-5.9%**	**14.6%**	**12.8%**	**-2.1%**	**13.0%**
Russell 1000 Value	-8.3	13.7	17.3	-3.8	13.5
Excess	2.4	0.9	-4.5	1.7	-0.5
EARNEST PARTNERS	**-7.7**	**19.9**	**16.2**	**-2.7**	**14.0**
Russell 1000 Value	-8.3	13.7	17.3	-3.8	13.5
Excess	0.6	6.2	-1.1	1.1	0.5
LSV	**-11.8**	**18.6**	**17.0**	**-2.2**	**14.0**
Russell 1000 Value	-8.3	13.7	17.3	-3.8	13.5
Excess	-3.6	4.9	-0.4	1.6	0.6
RUSSELL 1000 VALUE AGGREGATE	**-8.7%**	**17.3%**	**15.3**	**-3.2**	**13.1**
Russell 1000 Value	-8.3%	13.7%	17.3	-3.8	13.5
Excess	-0.4%	3.7%	-2.1	0.6	-0.4

STATE STREET.

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Semi-Passive Large Cap										
BLACKROCK	**$1,076,580,810**	**3.5%**	**13.9%**	**5.4%**	**8.8%**	**14.9%**	**11.6%**	**16.6%**	**9.9%**	**01/1995**
Semi Passive Domestic Equity Benchmark			14.0	5.5	9.3	13.5	10.6	16.0	9.5	01/1995
Excess			-0.1	-0.1	-0.5	1.4	0.9	0.5	0.4	
J.P. MORGAN	**1,297,867,087**	**4.2**	**13.3**	**4.9**	**8.5**	**13.3**	**10.6**	**16.5**	**9.7**	**01/1995**
Semi Passive Domestic Equity Benchmark			14.0	5.5	9.3	13.5	10.6	16.0	9.5	01/1995
Excess			-0.7	-0.6	-0.8	-0.3	-0.0	0.5	0.2	
SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE	**2,374,447,897**	**7.7**	**13.6**	**5.1**	**8.6**	**13.3**	**10.5**	**16.2**		
Semi Passive Domestic Equity Benchmark			14.0	5.5	9.3	13.5	10.6	16.0		
Excess			-0.4	-0.4	-0.7	-0.2	-0.1	0.1		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Semi-Passive Large Cap					
BLACKROCK	**-4.1%**	**24.6%**	**12.5%**	**0.8%**	**14.2%**
Semi Passive Domestic Equity Benchmark	-4.8	21.7	12.1	0.9	13.2
Excess	0.7	2.9	0.5	-0.1	1.0
J.P. MORGAN	**-5.4**	**21.8**	**12.3**	**0.8**	**15.0**
Semi Passive Domestic Equity Benchmark	-4.8	21.7	12.1	0.9	13.2
Excess	-0.6	0.1	0.2	-0.1	1.8
SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE	**-4.9%**	**22.5%**	**11.1**	**0.5**	**14.2**
Semi Passive Domestic Equity Benchmark	-4.8%	21.7%	12.1	0.9	13.2
Excess	-0.1%	0.8%	-1.0	-0.4	1.0

STATE STREET.

Active Small Cap Growth

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
ARROWMARK	**$237,777,350**	**0.8%**	**13.7%**	**0.9%**	**11.5%**				**20.8%**	**11/2016**
Russell 2000 Growth			17.1	-3.2	3.9				16.1	11/2016
Excess			-3.5	4.1	7.6				4.8	
HOOD RIVER	**255,140,201**	**0.8**	**18.9**	**0.6**	**8.8**				**16.8**	**11/2016**
Russell 2000 Growth			17.1	-3.2	3.9				16.1	11/2016
Excess			1.7	3.8	5.0				0.7	
RICE HALL JAMES	**220,827,938**	**0.7**	**9.9**	**-10.3**	**-4.4**				**17.2**	**11/2016**
Russell 2000 Growth			17.1	-3.2	3.9				16.1	11/2016
Excess			-7.2	-7.1	-8.3				1.1	
WELLINGTON	**253,147,224**	**0.8**	**20.6**	**-1.9**	**3.9**				**16.5**	**11/2016**
Russell 2000 Growth			17.1	-3.2	3.9				16.1	11/2016
Excess			3.4	1.2	0.1				0.4	
RUSSELL 2000 GROWTH AGGREGATE	**966,892,712**	**3.1**	**15.8**	**-2.7**	**4.8**	**13.8**	**6.5**	**14.7**		
Russell 2000 Growth			17.1	-3.2	3.9	14.9	8.4	16.5		
Excess			-1.3	0.5	1.0	-1.1	-1.9	-1.8		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Active Small Cap Growth					
ARROWMARK	**0.9%**	**26.2%**			
Russell 2000 Growth	-9.3	22.2			
Excess	10.3	4.1			
HOOD RIVER	**-7.0**	**21.3**			
Russell 2000 Growth	-9.3	22.2			
Excess	2.3	-0.9			
RICE HALL JAMES	**-6.9**	**27.9**			
Russell 2000 Growth	-9.3	22.2			
Excess	2.4	5.8			
WELLINGTON	**-11.6**	**22.6**			
Russell 2000 Growth	-9.3	22.2			
Excess	-2.3	0.4			
RUSSELL 2000 GROWTH AGGREGATE	**-6.2%**	**22.0%**	**4.7**	**1.0**	**-3.4**
Russell 2000 Growth	-9.3%	22.2%	11.3	-1.4	5.6
Excess	3.2%	-0.1%	-6.6	2.4	-9.0

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Small Cap Value										
GOLDMAN SACHS	**$355,232,839**	**1.2%**	**12.5%**	**-4.3%**	**-0.6%**	**10.8%**	**6.4%**	**15.6%**	**9.1%**	**01/2004**
Russell 2000 Value			11.9	-7.5	0.2	10.9	5.6	14.1	7.6	01/2004
Excess			0.5	3.2	-0.8	-0.0	0.8	1.5	1.6	
HOTCHKIS AND WILEY	**295,161,391**	**1.0**	**11.6**	**-9.5**	**-1.3**	**8.4**	**4.5**	**18.8**	**7.8**	**01/2004**
Russell 2000 Value			11.9	-7.5	0.2	10.9	5.6	14.1	7.6	01/2004
Excess			-0.3	-2.0	-1.4	-2.5	-1.1	4.7	0.2	
MARTINGALE	**281,474,030**	**0.9**	**11.4**	**-9.0**	**-3.5**	**9.6**	**6.2**	**15.6**	**7.5**	**01/2004**
Russell 2000 Value			11.9	-7.5	0.2	10.9	5.6	14.1	7.6	01/2004
Excess			-0.6	-1.5	-3.7	-1.2	0.6	1.5	-0.1	
PEREGRINE	**354,295,668**	**1.2**	**12.3**	**-10.1**	**-4.6**	**10.1**	**5.4**	**16.7**	**9.8**	**07/2000**
Russell 2000 Value			11.9	-7.5	0.2	10.9	5.6	14.1	9.2	07/2000
Excess			0.3	-2.6	-4.8	-0.7	-0.2	2.5	0.5	
RUSSELL 2000 VALUE AGGREGATE	**1,286,163,929**	**4.2**	**12.0**	**-8.2**	**-2.5**	**9.8**	**5.6**	**16.5**		
Russell 2000 Value			11.9	-7.5	0.2	10.9	5.6	14.1		
Excess			0.0	-0.7	-2.7	-1.0	0.0	2.4		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Active Small Cap Value					
GOLDMAN SACHS	**-13.3%**	**12.6%**	**24.6%**	**-5.2%**	**7.4%**
Russell 2000 Value	-12.9	7.8	31.7	-7.5	4.2
Excess	-0.5	4.7	-7.1	2.3	3.1
HOTCHKIS AND WILEY	**-14.4**	**7.9**	**19.9**	**-8.5**	**13.0**
Russell 2000 Value	-12.9	7.8	31.7	-7.5	4.2
Excess	-1.5	0.0	-11.8	-1.0	8.8
MARTINGALE	**-15.0**	**6.9**	**34.3**	**-5.2**	**7.3**
Russell 2000 Value	-12.9	7.8	31.7	-7.5	4.2
Excess	-2.1	-0.9	2.5	2.3	3.1
PEREGRINE	**-16.1**	**12.5**	**27.8**	**-6.7**	**4.1**
Russell 2000 Value	-12.9	7.8	31.7	-7.5	4.2
Excess	-3.3	4.7	-3.9	0.8	-0.1
RUSSELL 2000 VALUE AGGREGATE	**-14.7%**	**10.2%**	**26.5**	**-6.5**	**7.5**
Russell 2000 Value	-12.9%	7.8%	31.7	-7.5	4.2
Excess	-1.8%	2.3%	-5.2	1.0	3.3

STATE STREET

Total Passive Domestic Equity

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
BLACKROCK RUSSELL 1000	**$21,754,642,243**	**70.8%**	**14.0%**	**5.5%**	**9.3%**				**14.9%**	**11/2016**
Russell 1000			14.0	5.5	9.3				14.9	11/2016
Excess			0.0	-0.0	-0.0				-0.0	
BLACKROCK RUSSELL 2000	**581,953,732**		**14.4**						**2.6**	**11/2018**
RUSSELL 2000 (DAILY)			14.6						2.6	11/2018
Excess			-0.2						0.1	
BLACKROCK RUSSELL 3000 (1)	**1,555,219,825**	**5.1**	**14.1**	**4.7**	**8.8**	**13.5%**	**10.4%**	**16.0%**	**9.2**	**07/1995**
Passive Manager Benchmark			14.0	4.7	8.8	13.5	10.4	16.0	9.1	07/1995
PASSIVE DOMESTIC EQUITY AGGREGATE	**23,891,815,801**	**77.7**	**14.0**	**5.2**	**9.0**	**13.6**	**10.4**	**16.0**		
Passive Domestic Equity Benchmark			14.0	5.2	9.1	13.6	10.4	16.0		
Excess			0.0	-0.0	-0.0	-0.1	-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.

The passively managed portfolios may, at times, exhibit minimal tracking error from the benchmark as a result of the Sudan and Iran restrictions.

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Total Passive Domestic Equity					
BLACKROCK RUSSELL 1000	**-4.8%**	**21.7%**			
Russell 1000	-4.8	21.7			
Excess	-0.0	-0.0			
BLACKROCK RUSSELL 2000					
RUSSELL 2000 (DAILY)					
Excess					
BLACKROCK RUSSELL 3000 (1)	**-5.2**	**21.1**	**12.7%**	**0.5%**	**12.6%**
Passive Manager Benchmark	-5.2	21.1	12.7	0.5	12.6
PASSIVE DOMESTIC EQUITY AGGREGATE	**-5.0%**	**21.3%**	**12.6**	**0.5**	**12.6**
Passive Domestic Equity Benchmark	-5.0%	21.5%	12.5	0.5	12.6
Excess	-0.0%	-0.2%	0.1	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.

This page intentionally left blank.

International Equity

March 31, 2019

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total International Equity										
DEVELOPED MARKETS (1)	**$10,632,288,971**	**74.5%**	**10.8%**	**-2.7%**	**-3.1%**	**7.3%**	**2.7%**	**9.5%**		
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8		
Excess			0.4	-0.3	0.1	0.0	0.5	0.7		
EMERGING MARKETS (2)	**3,640,350,809**	**25.5**	**9.9**	**0.3**	**-8.0**	**9.8**	**3.1**	**8.4**		
BENCHMARK EM			9.9	0.6	-7.4	10.7	3.7	8.9		
Excess			0.0	-0.3	-0.6	-0.9	-0.5	-0.6		
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)	3,482,295	0.0								
TOTAL INTERNATIONAL EQUITY (4)	**14,276,122,076**	**100.0**	**10.5**	**-2.1**	**-4.4**	**7.8**	**2.8**	**9.3**	**6.4**	**10/1992**
International Equity Benchmark			10.3	-1.6	-4.2	8.1	2.6	8.9	5.9	10/1992
Excess			0.2	-0.5	-0.2	-0.3	0.3	0.4	0.5	

(1) The current benchmak 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 includes 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 75% MSCI World ex USA (net) and 25% MSCI Emerging Markets Free (net).

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

STATE STREET

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Total International Equity					
DEVELOPED MARKETS (1)	**-14.2%**	**24.9%**	**1.3%**	**-0.3%**	**-4.1%**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-0.1	0.7	-1.5	2.8	0.2
EMERGING MARKETS (2)	**-15.4**	**37.7**	**7.5**	**-13.1**	**-3.8**
BENCHMARK EM	-14.6	37.3	11.2	-14.9	-2.2
Excess	-0.8	0.4	-3.7	1.9	-1.6
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)					
TOTAL INTERNATIONAL EQUITY (4)	**-14.5%**	**27.6%**	**2.6**	**-2.9**	**-4.0**
International Equity Benchmark	-14.2%	27.2%	4.5	-5.7	-3.9
Excess	-0.3%	0.4%	-1.8	2.8	-0.2

(1) The current benchmak 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 includes 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 75% MSCI World ex USA (net) and 25% MSCI Emerging Markets Free (net).

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

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Developed Markets										
ACADIAN	**$377,923,187**	**2.6%**	**9.9%**	**-5.4%**	**-4.7%**	**12.0%**	**6.5%**	**12.1%**	**6.4%**	**07/2005**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	4.6	07/2005
Excess			-0.6	-3.0	-1.5	4.7	4.3	3.3	1.7	
COLUMBIA	**337,105,099**	**2.4**	**12.7**	**-2.9**	**-3.3**	**8.1**	**4.6**	**10.1**	**2.8**	**03/2000**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	3.2	03/2000
Excess			2.3	-0.5	-0.2	0.8	2.4	1.3	-0.4	
FIDELITY	**366,490,345**	**2.6**	**11.8**	**-3.0**	**-2.5**	**7.8**	**3.1**	**10.2**	**6.1**	**07/2005**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	4.6	07/2005
Excess			1.4	-0.6	0.6	0.5	0.9	1.3	1.4	
JP MORGAN	**251,952,594**	**1.8**	**13.1**	**-2.9**	**-4.1**	**9.0**	**2.7**	**9.2**	**4.8**	**07/2005**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	4.6	07/2005
Excess			2.7	-0.5	-1.0	1.7	0.5	0.4	0.1	
MARATHON	**442,663,898**	**3.1**	**9.9**	**-4.0**	**-3.0**	**6.2**	**3.3**	**10.8**	**7.9**	**11/1993**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	4.9	11/1993
Excess			-0.5	-1.6	0.2	-1.1	1.1	2.0	3.0	
MCKINLEY	**250,865,753**	**1.8**	**11.8**	**-5.8**	**-5.2**	**6.2**	**2.1**	**8.4**	**4.3**	**07/2005**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	4.6	07/2005
Excess			1.4	-3.4	-2.0	-1.1	-0.1	-0.4	-0.3	
ACTIVE DEVELOPED MARKETS AGGREGATE	**2,027,000,876**	**14.2**	**11.3**	**-3.9**	**-3.5**	**8.0**	**3.8**	**10.2**		
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8		
Excess			0.9	-1.5	-0.3	0.7	1.6	1.4		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Active Developed Markets					
ACADIAN	**-13.5%**	**37.0%**	**8.1%**	**2.4%**	**-1.7%**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	0.6	12.8	5.4	5.4	2.6
COLUMBIA	**-14.9**	**32.7**	**-5.6**	**6.4**	**-5.6**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-0.8	8.5	-8.3	9.4	-1.2
FIDELITY	**-14.6**	**25.9**	**1.2**	**0.1**	**-5.6**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-0.5	1.7	-1.5	3.2	-1.3
JP MORGAN	**-17.3**	**28.3**	**4.0**	**-4.7**	**-5.1**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-3.3	4.1	1.2	-1.6	-0.7
MARATHON	**-13.4**	**23.1**	**-1.1**	**6.7**	**-4.0**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	0.7	-1.1	-3.8	9.7	0.3
MCKINLEY	**-15.9**	**28.5**	**-7.5**	**3.1**	**-2.7**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-1.9	4.3	-10.2	6.2	1.6
ACTIVE DEVELOPED MARKETS AGGREGATE	**-14.5%**	**28.4%**	**-0.2**	**3.2**	**-4.1**
BENCHMARK DM	-14.1%	24.2%	2.7	-3.0	-4.3
Excess	-0.4%	4.2%	-3.0	6.2	0.2

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Semi-Passive Developed Markets										
AQR	**$338,512,227**	**2.4%**	**12.2%**	**-3.5%**	**-6.9%**	**5.8%**	**1.9%**	**9.6%**	**5.0%**	**07/2005**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	4.6	07/2005
Excess			1.7	-1.1	-3.7	-1.4	-0.3	0.8	0.3	
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**338,512,227**	**2.4**	**12.2**	**-3.5**	**-6.9**	**5.1**	**1.2**	**8.8**		
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8		
Excess			1.7	-1.1	-3.7	-2.2	-1.0	-0.1		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Semi-Passive Developed Markets					
AQR	**-18.2%**	**25.1%**	**0.8%**	**0.9%**	**-4.4%**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-4.1	0.9	-2.0	3.9	-0.1

SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**-18.7%**	**23.3%**	**-0.4**	**-0.3**	**-4.4**
BENCHMARK DM	-14.1%	24.2%	2.7	-3.0	-4.3
Excess	-4.6%	-0.9%	-3.1	2.7	-0.1

STATE STREET.

Total Developed Markets

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
ACTIVE DEVELOPED MARKETS AGGREGATE	**$2,027,000,876**	**14.2%**	**11.3%**	**-3.9%**	**-3.5%**	**8.0%**	**3.8%**	**10.2%**		
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8		
Excess			0.9	-1.5	-0.3	0.7	1.6	1.4		
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**338,512,227**	**2.4**	**12.2**	**-3.5**	**-6.9**	**5.1**	**1.2**	**8.8**		
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8		
Excess			1.7	-1.1	-3.7	-2.2	-1.0	-0.1		
SSgA DEVELOPED MARKETS PASSIVE	**8,266,775,868**	**57.9**	**10.7**	**-2.3**	**-2.7**	**7.7**	**2.6**	**9.3**	**6.1**	**10/1992**
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8	5.7	10/1992
Excess			0.2	0.2	0.4	0.4	0.4	0.4	0.3	
DEVELOPED MARKETS TOTAL	**10,632,288,971**	**74.5**	**10.8**	**-2.7**	**-3.1**	**7.3**	**2.7**	**9.5**		
BENCHMARK DM			10.4	-2.4	-3.1	7.3	2.2	8.8		
Excess			0.4	-0.3	0.1	0.0	0.5	0.7		

STATE STREET.

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Total Developed Markets					
ACTIVE DEVELOPED MARKETS AGGREGATE	**-14.5%**	**28.4%**	**-0.2%**	**3.2%**	**-4.1%**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-0.4	4.2	-3.0	6.2	0.2
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**-18.7**	**23.3**	**-0.4**	**-0.3**	**-4.4**
BENCHMARK DM	-14.1	24.2	2.7	-3.0	-4.3
Excess	-4.6	-0.9	-3.1	2.7	-0.1
SSgA DEVELOPED MARKETS PASSIVE	**-13.9%**	**24.7%**	**3.2**	**-2.6**	**-3.9**
BENCHMARK DM	-14.1%	24.2%	2.7	-3.0	-4.3
Excess	0.2%	0.5%	0.4	0.5	0.4
DEVELOPED MARKETS TOTAL	**-14.2%**	**24.9%**	**1.3**	**-0.3**	**-4.1**
BENCHMARK DM	-14.1%	24.2%	2.7	-3.0	-4.3
Excess	-0.1%	0.7%	-1.5	2.8	0.2

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Emerging Markets										
EARNEST PARTNERS	**$307,656,930**	**2.2%**	**12.9%**	**4.6%**	**-6.5%**				**8.1%**	**04/2017**
MSCI EMERGING MARKETS			9.9	0.6	-7.4				7.6	04/2017
Excess			2.9	4.0	0.9				0.5	
MARTIN CURRIE	**333,558,558**	**2.3**	**12.7**	**-1.1**	**-7.3**				**11.0**	**04/2017**
BENCHMARK EM			9.9	0.6	-7.4				7.6	04/2017
Excess			2.8	-1.7	0.2				3.5	
MACQUARIE	**319,914,803**	**2.2**	**10.4**	**1.7**	**-4.9**				**8.5**	**04/2017**
BENCHMARK EM			9.9	0.6	-7.4				7.6	04/2017
Excess			0.5	1.1	2.5				1.0	
MORGAN STANLEY	**589,585,749**	**4.1**	**7.5**	**-1.3**	**-11.5**	**8.0%**	**3.1%**	**9.3%**	**9.2**	**01/2001**
BENCHMARK EM			9.9	0.6	-7.4	10.7	3.7	8.9	9.1	01/2001
Excess			-2.4	-1.9	-4.1	-2.7	-0.6	0.3	0.1	
NEUBERGER BERMAN	**315,160,596**	**2.2**	**11.2**	**-1.0**	**-8.8**				**7.8**	**04/2017**
BENCHMARK EM			9.9	0.6	-7.4				7.6	04/2017
Excess			1.3	-1.6	-1.4				0.3	
PZENA	**296,966,883**	**2.1**	**7.1**	**2.5**	**-4.9**				**5.2**	**04/2017**
BENCHMARK EM			9.9	0.6	-7.4				7.6	04/2017
Excess			-2.8	1.9	2.5				-2.4	
ROCK CREEK	**289,814,764**	**2.0**	**9.7**	**-2.5**	**-10.5**				**3.8**	**04/2017**
BENCHMARK EM			9.9	0.6	-7.4				7.6	04/2017
Excess			-0.2	-3.1	-3.1				-3.7	

STATE STREET

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Active Emerging Markets					
EARNEST PARTNERS	**-15.4%**				
MSCI EMERGING MARKETS	-14.6				
Excess	-0.8				
MARTIN CURRIE	**-16.6**				
BENCHMARK EM	-14.6				
Excess	-2.0				
MACQUARIE	**-13.3**				
BENCHMARK EM	-14.6				
Excess	1.3				
MORGAN STANLEY	**-16.7**	**37.9%**	**6.1%**	**-9.4%**	**-2.5%**
BENCHMARK EM	-14.6	37.3	11.2	-14.9	-2.2
Excess	-2.2	0.6	-5.1	5.5	-0.3
NEUBERGER BERMAN	**-17.1**				
BENCHMARK EM	-14.6				
Excess	-2.6				
PZENA	**-10.8**				
BENCHMARK EM	-14.6				
Excess	3.8				
ROCK CREEK	**-17.6**				
BENCHMARK EM	-14.6				
Excess	-3.1				

Total Emerging Markets

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
ACTIVE EMERGING MARKETS AGGREGATE	**$2,452,658,284**	**17.2%**	**9.9%**	**0.2%**	**-8.2%**	**8.9%**	**2.6%**	**8.1%**		
BENCHMARK EM			9.9	0.6	-7.4	10.7	3.7	8.9		
Excess			-0.0	-0.4	-0.8	-1.8	-1.1	-0.8		
SSGA EMERGING MARKETS PASSIVE	**1,187,692,525**	**8.3**	**10.1**	**0.8**	**-7.2**	**10.7**	**3.9**		**4.6**	**01/2012**
BENCHMARK EM			9.9	0.6	-7.4	10.7	3.7		4.5	01/2012
Excess			0.2	0.2	0.2	-0.0	0.2		0.1	
EMERGING MARKETS TOTAL	**3,640,350,809**	**25.5**	**9.9**	**0.3**	**-8.0**	**9.8**	**3.1**	**8.4**		
BENCHMARK EM			9.9	0.6	-7.4	10.7	3.7	8.9		
Excess			0.0	-0.3	-0.6	-0.9	-0.5	-0.6		

Total Emerging Markets

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
ACTIVE EMERGING MARKETS AGGREGATE	**-15.6%**	**37.2%**	**5.3%**	**-12.7%**	**-4.1%**
BENCHMARK EM	-14.6	37.3	11.2	-14.9	-2.2
Excess	-1.0	-0.1	-5.9	2.2	-2.0
SSGA EMERGING MARKETS PASSIVE	**-14.7%**	**37.4%**	**11.1**	**-14.6**	**-2.1**
BENCHMARK EM	-14.6%	37.3%	11.2	-14.9	-2.2
Excess	-0.1%	0.1%	-0.1	0.3	0.0
EMERGING MARKETS TOTAL	**-15.4%**	**37.7%**	**7.5**	**-13.1**	**-3.8**
BENCHMARK EM	-14.6%	37.3%	11.2	-14.9	-2.2
Excess	-0.8%	0.4%	-3.7	1.9	-1.6

This page intentionally left blank.

Fixed Income

March 31, 2019

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total Fixed Income										
ACTIVE FIXED INCOME AGGREGATE	**$4,134,827,764**	**50.1%**	**3.6%**	**5.0%**	**4.9%**	**3.3%**	**3.5%**	**5.8%**		
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8		
Excess			0.7	0.3	0.4	1.3	0.7	2.0		
SEMI PASSIVE FIXED INCOME AGGREGATE	**4,115,184,387**	**49.9**	**3.2**	**4.7**	**4.7**	**2.2**	**2.9**	**4.7**		
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8		
Excess			0.3	0.1	0.2	0.2	0.2	0.9		
TRANSITION AGGREGATE FIXED INCOME (1)	18,036	0.0								
TOTAL FIXED INCOME (2)	**8,250,030,187**	**100.0**	**3.4**	**4.9**	**4.8**	**2.7**	**3.2**	**5.2**	**7.5**	**07/1984**
Fixed Income Benchmark			2.9	4.6	4.5	2.0	2.7	3.8	7.1	07/1984
Excess			0.5	0.2	0.3	0.7	0.4	1.4	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.

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Total Fixed Income					
ACTIVE FIXED INCOME AGGREGATE	**0.0%**	**4.7%**	**4.4%**	**0.6%**	**6.2%**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.0	1.2	1.7	0.0	0.2
SEMI PASSIVE FIXED INCOME AGGREGATE	**-0.1**	**3.7**	**2.8**	**0.8**	**6.1**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.1	0.2	0.2	0.2	0.1
TRANSITION AGGREGATE FIXED INCOME (1)					
TOTAL FIXED INCOME (2)	**-0.0%**	**4.2%**	**3.6**	**0.7**	**6.1**
Fixed Income Benchmark	0.0%	3.5%	2.6	0.5	6.0
Excess	-0.1%	0.7%	0.9	0.1	0.2

(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.

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Fixed Income Managers										
COLUMBIA	**$1,025,008,670**	**12.4%**	**3.8%**	**5.1%**	**5.3%**	**3.5%**	**3.6%**	**5.3%**	**5.4%**	**07/1993**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	5.2	07/1993
Excess			0.9	0.5	0.8	1.5	0.8	1.5	0.2	
DODGE & COX	**1,120,130,662**	**13.6**	**3.5**	**4.6**	**4.4**	**3.3**	**3.3**	**5.7**	**5.9**	**02/2000**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	5.0	02/2000
Excess			0.6	-0.0	-0.1	1.3	0.5	1.9	1.0	
PIMCO	**926,027,515**	**11.2**	**3.3**	**5.0**	**5.0**	**2.7**	**3.1**	**5.6**	**5.4**	**10/2008**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	4.0	10/2008
Excess			0.3	0.3	0.6	0.7	0.4	1.8	1.4	
WESTERN	**1,063,660,917**	**12.9**	**3.9**	**5.2**	**4.9**	**3.7**	**3.8**	**6.1**	**8.3**	**07/1984**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	7.2	07/1984
Excess			0.9	0.6	0.4	1.6	1.1	2.3	1.1	
ACTIVE FIXED INCOME AGGREGATE	**4,134,827,764**	**50.1**	**3.6**	**5.0**	**4.9**	**3.3**	**3.5**	**5.8**		
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8		
Excess			0.7	0.3	0.4	1.3	0.7	2.0		

STATE STREET.

Active Fixed Income Managers	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
COLUMBIA	**0.2%**	**4.8%**	**5.2%**	**0.2%**	**5.8%**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	0.2	1.2	2.6	-0.4	-0.2
DODGE & COX	**-0.0**	**4.2**	**4.8**	**0.3**	**6.0**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.1	0.7	2.2	-0.3	0.0
PIMCO	**0.4**	**4.4**	**2.8**	**1.0**	**5.5**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	0.4	0.8	0.2	0.4	-0.4
WESTERN	**-0.2**	**5.6**	**4.9**	**0.7**	**7.0**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.3	2.1	2.2	0.1	1.0
ACTIVE FIXED INCOME AGGREGATE	**0.0%**	**4.7%**	**4.4**	**0.6**	**6.2**
BBG BARC Agg (Dly)	0.0%	3.5%	2.6	0.5	6.0
Excess	-0.0%	1.2%	1.7	0.0	0.2

Semi Passive Fixed Income Managers	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
BLACKROCK	**$1,324,247,708**	**16.1%**	**3.3%**	**4.8%**	**4.7%**	**2.2%**	**2.9%**	**4.3%**	**5.2%**	**04/1996**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	5.1	04/1996
Excess			0.4	0.2	0.2	0.2	0.2	0.5	0.1	
GOLDMAN SACHS	**1,426,181,715**	**17.3**	**3.3**	**4.6**	**4.7**	**2.4**	**3.0**	**4.7**	**5.5**	**07/1993**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	5.2	07/1993
Excess			0.3	-0.0	0.2	0.3	0.2	1.0	0.3	
NEUBERGER	**1,364,754,964**	**16.5**	**3.1**	**4.7**	**4.6**	**2.1**	**2.9**	**5.0**	**6.3**	**07/1988**
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8	6.1	07/1988
Excess			0.2	0.1	0.1	0.0	0.1	1.2	0.2	
SEMI PASSIVE FIXED INCOME	**4,115,184,387**	**49.9**	**3.2**	**4.7**	**4.7**	**2.2**	**2.9**	**4.7**		
BBG BARC Agg (Dly)			2.9	4.6	4.5	2.0	2.7	3.8		
Excess			0.3	0.1	0.2	0.2	0.2	0.9		

STATE STREET.

Semi Passive Fixed Income Managers	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
BLACKROCK	**-0.1%**	**3.7%**	**2.8%**	**0.9%**	**6.0%**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.2	0.1	0.1	0.3	0.0
GOLDMAN SACHS	**-0.0**	**3.9**	**3.0**	**0.8**	**6.1**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.0	0.4	0.3	0.2	0.1
NEUBERGER	**-0.1**	**3.6**	**2.7**	**0.7**	**6.1**
BBG BARC Agg (Dly)	0.0	3.5	2.6	0.5	6.0
Excess	-0.1	0.0	0.1	0.2	0.2
SEMI PASSIVE FIXED INCOME	**-0.1%**	**3.7%**	**2.8**	**0.8**	**6.1**
BBG BARC Agg (Dly)	0.0%	3.5%	2.6	0.5	6.0
Excess	-0.1%	0.2%	0.2	0.2	0.1

This page intentionally left blank.

Treasuries
March 31, 2019

Minnesota State Board of Investment
Quarter Ending March 31, 2019
Treasuries Managers

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Treasuries Managers										
BLACKROCK	**$2,069,748,270**	**33.4%**	**3.3%**	**5.5%**	**5.6%**				**4.9%**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.3	5.6	5.7				5.0	02/2018
Excess			0.0	-0.1	-0.1				-0.1	
GOLDMAN SACHS	**2,054,980,361**	**33.1**	**3.4**	**5.4**	**5.6**				**4.9**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.3	5.6	5.7				5.0	02/2018
Excess			0.0	-0.2	-0.1				-0.1	
NEUBERGER	**2,078,281,552**	**33.5**	**3.3**	**5.5**	**5.6**				**4.9**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.3	5.6	5.7				5.0	02/2018
Excess			0.0	-0.1	-0.1				-0.2	
TREASURIES TRANSITION ACCOUNT	306	0.0								03/2018
TOTAL TREASURIES	**6,203,010,488**	**100.0**	**3.4**	**5.5**	**5.8**				**4.9%**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.3	5.6	5.7				5.0%	02/2018
Excess			0.0	-0.1	0.1				-0.1%	

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Treasuries 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					

This page intentionally left blank.

Private Markets
March 31, 2019

Combined Funds Asset Class Performance Summary

Private Markets

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	25 year	30 year
Private Markets	-0.6%	7.4%	9.9%	13.7%	10.8%	11.3%	12.7%	13.4%	12.1%
Private Equity	0.0%	9.0%	11.7%	16.2%	14.3%	14.8%	13.5%	15.0%	
Private Credit	1.7	8.6	13.3	15.0	13.4	12.5	12.6		
Resources	-3.8	3.5	4.3	7.9	-0.5	5.1	16.3	14.8	
Real Estate	0.7	5.8	8.6	9.4	12.1	6.5	8.8	9.4	

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, 2019

Investment	Total Commitment	Total Contribution	MarketValue	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
I. PRIVATE EQUITY								
Adams Street Partners								
Adams Street Global Secondary Fund 5	100,000,000	76,529,750	55,959,571	35,323,971	23,470,250	5.95	1.19	**6.53**
Adams Street Global Secondary Fund 6	100,000,000	6,200,000	6,063,155	1,214,007	93,800,000	21.73	1.17	**1.75**
Advent International								
Advent International GPE VI	50,000,000	52,993,313	9,704,411	99,117,913	0	17.01	2.05	**10.75**
Advent International GPE VII	90,000,000	84,690,641	79,402,084	66,872,078	5,400,000	15.85	1.73	**6.29**
Advent International GPE VIII	100,000,000	80,000,000	87,270,240	0	20,000,000	7.43	1.09	**2.90**
Affinity Ventures								
Affinity Ventures IV	4,000,000	4,000,000	581,616	1,541,970	0	-11.88	0.53	**14.51**
Affinity Ventures V	5,000,000	5,000,000	2,269,355	1,706,245	0	-4.16	0.80	**10.50**
APAX Partners								
Apax VIII - USD	200,000,000	222,011,295	196,294,438	128,629,531	14,644,515	12.92	1.46	**5.82**
Apax IX - USD	150,000,000	67,917,205	79,623,530	1,422,626	83,505,421	13.18	1.19	**2.61**
Asia Alternatives								
Asia Alternatives Capital Partners V	99,000,000	11,743,258	8,793,633	236,072	87,489,919	-32.91	0.77	**1.50**
Banc Fund								
Banc Fund VIII	98,250,000	98,250,000	75,691,000	131,849,973	0	13.28	2.11	**10.69**
Banc Fund IX	107,205,932	107,205,932	110,058,253	15,797,530	0	6.33	1.17	**4.56**
Banc Fund X	70,254,545	16,888,364	15,805,448	0	53,366,182	-15.21	0.94	**0.66**
BlackRock								
BlackRock Long Term Capital	250,000,000	0	0	0	250,000,000	0.00	0.00	**0.01**
Blackstone Capital Partners								
Blackstone Capital Partners IV	70,000,000	84,429,831	2,206,771	198,448,669	1,862,355	37.02	2.38	**16.48**
Blackstone Capital Partners V	140,000,000	152,162,719	6,521,345	237,135,663	7,027,560	7.96	1.60	**12.92**
Blackstone Capital Partners VI	100,000,000	102,009,930	83,531,632	77,611,188	14,625,966	12.94	1.58	**10.44**
Blackstone Capital Partners VII	130,000,000	75,004,297	83,692,242	3,128,886	62,623,368	15.87	1.16	**3.50**
Blackstone Capital Partners VIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.01**
Blackstone Strategic Partners (CSFB/ DLJ)								
Strategic Partners III VC	25,000,000	24,998,952	4,056,121	30,730,341	1,067,943	6.34	1.39	**13.59**
Strategic Partners III-B	100,000,000	79,488,031	6,973,595	113,709,086	14,934,308	6.58	1.52	**13.59**
Strategic Partners IV VC	40,500,000	41,033,721	11,404,029	52,855,773	2,464,627	9.72	1.57	**10.77**
Strategic Partners IV-B	100,000,000	98,968,390	13,137,748	142,617,771	17,847,245	12.49	1.57	**10.54**
Strategic Partners V	100,000,000	83,702,476	22,321,683	113,608,228	38,373,062	19.43	1.62	**7.37**
Strategic Partners VI	150,000,000	93,008,822	59,268,579	83,025,710	62,908,442	18.91	1.53	**4.71**
Strategic Partners VII	150,000,000	94,176,314	115,791,077	14,618,810	68,912,171	35.24	1.38	**2.02**
Strategic Partners VIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.25**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Bridgepoint								
Bridgepoint Europe VI	168,439,238	9,854,501	-1,492,910	0	158,584,737	0.00	-0.15	**0.78**
Brookfield Asset Management								
Brookfield Capital Partners Fund IV	100,000,000	90,158,299	102,305,186	94,413,183	26,011,713	62.70	2.18	**3.30**
Brookfield Capital Partners V	250,000,000	0	0	0	250,000,000	0.00	0.00	**0.43**
Cardinal Partners								
DSV Partners IV	10,000,000	10,000,000	30,883	39,196,082	0	10.61	3.92	**34.01**
Carlyle Group								
Carlyle Partners VII	150,000,000	20,519,056	16,818,301	0	129,480,944	-27.34	0.82	**1.04**
Chicago Growth Partners (William Blair)								
William Blair Capital Partners VII	50,000,000	48,150,000	963,361	69,201,191	1,650,000	8.59	1.46	**17.82**
Chicago Growth Partners I	50,000,000	52,441,998	1,910,119	54,532,745	300,000	1.72	1.08	**13.44**
Chicago Growth Partners II	60,000,000	58,347,626	4,396,924	120,959,703	1,652,374	19.78	2.15	**10.81**
Court Square Capital Partners								
Court Square Capital Partners	100,000,000	80,979,104	0	182,589,856	0	28.92	2.25	**17.06**
Court Square Capital Partners II	175,000,000	169,619,122	18,430,085	292,733,020	16,743,084	12.95	1.83	**12.32**
Court Square Capital Partners III	175,000,000	169,868,435	161,923,135	74,721,696	21,873,196	16.45	1.39	**6.58**
Court Square Capital Partners IV	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.64**
Crescendo								
Crescendo IV	101,500,000	103,101,226	2,193,945	53,333,662	0	-5.11	0.54	**18.82**
CVC Capital Partners								
CVC European Equity Partners V	133,919,960	153,756,444	39,421,920	245,961,796	1,603,698	16.38	1.86	**10.77**
CVC Capital Partners VI	257,629,368	255,517,001	255,992,746	71,239,674	5,980,427	12.41	1.28	**5.48**
Elevation Partners								
Elevation Partners	75,000,000	73,237,580	150,601	113,492,106	799,634	11.81	1.55	**13.63**
Fox Paine & Company								
Fox Paine Capital Fund II	50,000,000	46,541,161	0	90,994,335	0	18.88	1.96	**18.51**
GHJM								
TrailHead Fund	20,000,000	16,070,803	27,711,903	6,406,955	3,935,813	16.38	2.12	**6.85**
Glouston Capital Partners**								
Glouston Private Equity Opportunities Fund IV	5,337,098	4,376,198	1,307,360	3,457,751	1,090,000	3.90	1.09	**4.00**
GS Capital Partners								
GS Capital Partners V	100,000,000	74,319,006	994,754	191,435,136	1,041,099	18.26	2.59	**13.75**
GS Capital Partners VI	100,000,000	109,807,690	13,006,862	130,385,768	2,801,717	7.27	1.31	**11.92**
GS Vintage VII	100,000,000	68,395,888	68,393,494	11,282,171	37,822,233	20.82	1.16	**2.50**
West Street Capital Partners VII	150,000,000	50,208,011	42,655,797	10,466,036	110,258,025	4.74	1.06	**2.02**
GS China-US Cooperation Fund	99,800,000	10,154,445	9,980,000	0	89,820,000	-1.74	0.98	**0.62**
GTCR								
GTCR IX	75,000,000	71,414,933	164,722	128,764,150	3,585,067	13.77	1.81	**12.50**
GTCR X	100,000,000	103,907,821	18,979,779	188,348,914	6,751,396	21.45	2.00	**8.06**
GTCR XI	110,000,000	96,620,726	86,570,466	63,593,531	14,541,556	21.47	1.55	**5.12**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
HarbourVest**								
Dover Street VII Cayman Fund	2,198,112	2,072,048	382,359	1,552,382	132,416	-3.39	0.93	**4.00**
HarbourVest Intl PE Partners V-Cayman US	3,520,261	3,344,847	885,288	3,517,949	179,656	14.19	1.32	**4.00**
Harbourvest Intl PE Partners VI-Cayman	4,233,804	3,999,555	3,637,448	2,223,277	235,798	14.44	1.47	**4.00**
HarbourVest Partners VIII Cayman Buyout	4,506,711	4,298,488	1,606,924	4,177,128	234,000	14.15	1.35	**4.00**
HarbourVest Partners VIII-Cayman Venture	7,190,898	7,079,986	3,574,001	5,232,582	140,000	8.02	1.24	**4.00**
Hellman & Friedman								
Hellman & Friedman Capital Partners VI	175,000,000	171,037,755	11,332,376	307,986,481	5,084,864	13.01	1.87	**11.76**
Hellman & Friedman Capital Partners VII	50,000,000	49,709,416	65,454,995	58,492,315	2,392,939	24.11	2.49	**9.70**
Hellman & Friedman Investors IX	175,000,000	0	0	0	175,000,000	0.00	0.00	**0.50**
IK Investment Partners								
IK Fund VII	180,223,914	177,717,768	166,822,507	104,167,821	8,014,992	12.65	1.52	**5.30**
IK Fund VIII	171,427,753	117,004,605	123,154,123	2,213,957	56,569,051	5.66	1.07	**2.44**
Kohlberg Kravis Roberts								
KKR Millennium Fund	200,000,000	205,167,570	176,152	424,946,028	0	16.37	2.07	**16.07**
KKR 2006 Fund	200,000,000	218,952,911	46,106,584	315,231,419	3,360,223	8.49	1.65	**12.26**
KKR Americas Fund XII	150,000,000	59,434,708	58,166,664	988,851	91,168,064	-0.73	1.00	**2.82**
KKR Asian Fund III	100,000,000	26,162,197	27,830,743	0	73,837,803	10.98	1.06	**1.75**
Leonard Green & Partners								
Green Equity Investors VI	200,000,000	215,919,566	211,916,844	134,256,374	20,574,386	15.32	1.60	**6.79**
Lexington Capital Partners								
Lexington Capital Partners VI	100,000,000	98,374,022	10,046,067	135,961,751	1,634,703	8.00	1.48	**13.02**
Lexington Capital Partners VII	200,000,000	172,466,709	58,581,672	214,537,493	38,059,995	14.90	1.58	**9.97**
Lexington Capital Partners VIII	150,000,000	127,263,490	117,884,014	47,346,361	35,502,201	21.15	1.30	**4.83**
Lexington Co-Investment Partners IV	200,000,000	120,067,524	123,257,043	6,715,339	86,647,815	11.88	1.08	**2.41**
Lexington Middle Market Investors IV	100,000,000	6,124,133	5,510,288	1,458,011	93,875,867	0.00	1.14	**2.02**
Lexington Capital Partners IX	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.48**
Madison Dearborn Capital Partners								
Madison Dearborn Capital Partners VII	100,000,000	60,172,495	61,682,330	5,817,652	45,617,359	7.83	1.12	**3.03**
Neuberger Berman								
Dyal Capital Partners III	175,000,000	148,823,236	95,710,277	90,871,490	114,705,661	27.28	1.25	**3.70**
Dyal Capital Partners IV	250,000,000	12,460,108	11,771,838	3,803,147	241,250,918	25.63	1.25	**0.73**
Nordic Capital								
Nordic Capital Fund VIII	177,013,081	190,003,473	144,959,824	113,548,413	101,596,540	12.35	1.36	**5.30**
Nordic Capital Fund IX Beta	168,516,280	11,735,575	18,776,201	0	156,780,706	73.03	1.60	**1.70**
North Sky Capital**								
North Sky Capital LBO Fund III	1,070,259	720,259	379,543	677,229	350,000	16.14	1.47	**4.00**
North Sky Capital Venture Fund III	1,384,080	1,277,830	388,559	1,190,311	106,250	10.15	1.24	**4.00**
Oak Hill Capital Management, Inc.								
Oak Hill Capital Partners IV	150,000,000	85,289,571	72,813,918	28,267,962	86,506,865	34.64	1.19	**2.05**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Paine Schwartz								
Paine Schwartz IV	75,000,000	51,684,432	49,297,096	14,823,737	24,388,722	9.71	1.24	**4.05**
Paine Schwartz V	150,000,000	0	-1,167,585	0	150,000,000	0.00	0.00	**0.66**
Permira								
Permira V	177,193,451	168,845,099	187,432,306	83,631,687	27,345,097	14.29	1.61	**5.00**
Permira VI	136,324,369	85,207,031	90,715,185	0	51,117,338	6.42	1.06	**2.43**
Public Pension Capital Management								
Public Pension Capital	150,000,000	62,217,316	77,172,045	12,963,678	97,311,442	18.02	1.45	**4.62**
RWI Ventures								
RWI Ventures I	7,603,265	7,603,265	454,001	6,122,274	0	-4.11	0.86	**12.51**
Silver Lake Partners								
Silver Lake Partners II	100,000,000	90,200,747	891,465	171,246,452	11,771,953	11.04	1.91	**14.50**
Silver Lake Partners III	100,000,000	91,834,879	31,236,719	174,273,455	10,559,311	18.77	2.24	**11.76**
Silver Lake Partners IV	100,000,000	107,924,321	119,545,001	58,837,842	7,964,397	23.75	1.65	**6.26**
Silver Lake Partners V	135,000,000	54,186,798	52,465,175	0	59,298,933	-5.60	0.97	**1.75**
Split Rock Partners								
Split Rock Partners	50,000,000	47,890,906	6,073,628	56,816,177	2,109,094	3.37	1.31	**13.67**
Split Rock Partners II	60,000,000	59,165,000	29,593,746	47,174,545	835,000	5.73	1.30	**10.68**
Summit Partners								
Summit Partners Growth Equity Fund VIII	100,000,000	115,015,327	68,375,530	157,829,723	24,040,551	25.45	1.97	**7.66**
Summit Partners Growth Equity Fund IX	100,000,000	71,100,000	71,831,005	9,973,626	38,873,626	21.10	1.15	**3.34**
Summit Partners Growth Equity Fund X	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.07**
Thoma Bravo								
Thoma Bravo Fund XII	75,000,000	72,161,313	76,736,965	2,298,018	5,207,940	6.49	1.10	**2.31**
Thoma Bravo Fund XIII	150,000,000	21,589,059	-148,172	0	128,410,941	0.00	-0.01	**0.75**
Thoma Cressey								
Thoma Cressey Fund VII	50,000,000	50,000,000	469,683	107,057,940	0	23.59	2.15	**18.36**
Thoma Cressey Fund VIII	70,000,000	69,577,712	459,963	202,471,763	770,000	18.27	2.92	**12.67**
Thomas H. Lee Partners								
Thomas H. Lee Equity Fund VII	100,000,000	88,480,318	89,589,137	30,607,993	20,286,044	23.05	1.36	**3.31**
Thomas H. Lee Equity Fund VIII	150,000,000	3,908,094	3,908,094	0	146,091,906	0.00	1.00	**0.75**
Thomas, McNerney & Partners								
Thomas, McNerney & Partners I	30,000,000	30,000,000	3,431,213	15,087,143	0	-7.61	0.62	**16.16**
Thomas, McNerney & Partners II	50,000,000	48,125,000	8,849,102	99,448,037	1,875,000	16.33	2.25	**12.50**
TPG Capital								
TPG Partners VII	100,000,000	86,937,891	92,337,951	12,416,379	19,674,307	13.54	1.20	**3.31**
Vestar Capital Partners								
Vestar Capital Partners IV	55,000,000	55,652,024	922,094	102,273,825	57,313	14.66	1.85	**19.05**
Vestar Capital Partners V	75,000,000	76,456,520	9,022,583	90,693,238	0	3.84	1.30	**13.04**
Vestar Capital Partners VI	100,000,000	106,195,246	73,867,249	118,359,663	1,821,992	28.64	1.81	**7.27**
Vestar Capital Partners VII	150,000,000	26,562,663	24,737,197	0	123,437,337	-16.56	0.93	**1.04**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Warburg Pincus								
Warburg Pincus Equity Partners	100,000,000	100,000,000	386,620	163,542,253	0	10.03	1.64	**20.52**
Warburg Pincus Private Equity VIII	100,000,000	100,373,266	3,310,281	224,974,951	0	14.72	2.27	**16.72**
Warburg Pincus Private Equity IX	100,000,000	100,000,000	5,913,937	168,124,301	0	9.76	1.74	**13.44**
Warburg Pincus Private Equity X	150,000,000	150,000,000	55,144,458	177,979,250	0	7.94	1.55	**11.19**
Warburg Pincus Private Equity XI	200,000,000	200,299,952	182,540,613	132,163,726	0	13.50	1.57	**6.02**
Warburg Pincus Private Equity XII	131,000,000	95,302,500	104,752,333	5,740,813	35,697,500	9.92	1.16	**3.11**
Warburg Pincus China	45,000,000	33,615,000	36,378,753	3,899,250	13,320,000	17.45	1.20	**2.05**
Warburg Pincus Financial Sector	90,000,000	23,553,308	16,050,594	4,590,000	70,920,000	-17.45	0.88	**1.04**
Warburg Pincus Global Growth	250,000,000	2,959,589	3,000,000	0	247,000,000	1.63	1.01	**0.36**
Wellspring Capital Partners								
Wellspring Capital Partners VI	125,000,000	15,256,864	13,453,259	0	109,743,136	-27.47	0.88	**2.30**
Welsh, Carson, Anderson & Stowe								
Welsh, Carson, Anderson & Stowe XI	100,000,000	100,000,000	36,763,181	129,502,945	0	12.66	1.66	**10.45**
Welsh, Carson, Anderson & Stowe XII	150,000,000	105,391,079	140,099,634	20,884,569	44,608,921	22.67	1.53	**4.03**
Welsh, Carson, Anderson & Stowe XIII	250,000,000	1,833,825	1,833,825	0	248,166,175	0.00	1.00	**0.76**
Windjammer Capital Investors								
Windjammer Mezzanine & Equity Fund II	66,708,861	55,215,684	64,128	84,876,800	10,139,363	8.94	1.54	**18.76**
Windjammer Senior Equity Fund III	75,000,000	62,684,411	270,605	154,618,016	13,380,380	19.54	2.47	**12.99**
Windjammer Senior Equity Fund IV	100,000,000	89,524,405	105,689,297	19,278,060	18,397,478	10.37	1.40	**6.85**
Windjammer Senior Equity Fund V	100,000,000	1,606,426	-140,032	0	98,393,574	0.00	-0.09	**1.12**
Private Equity Total	**14,170,951,240**	**8,992,597,431**	**5,325,649,430**	**8,668,475,356**	**5,863,223,888**	**12.51**	**1.56**	

II. PRIVATE CREDIT

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Audax Group								
Audax Mezzanine Fund III	100,000,000	94,508,254	20,449,134	99,967,596	7,129,087	8.94	1.27	**8.74**
Audax Mezzanine Fund IV	100,000,000	41,758,218	33,292,861	12,049,323	58,888,732	9.74	1.09	**3.73**
BlackRock								
BlackRock Middle Market Senior Fund	250,000,000	28,682,443	28,682,443	0	221,317,557	0.00	1.00	**0.71**
Crescent Capital Group								
TCW/Crescent Mezzanine Partners III	75,000,000	79,161,593	227,398	159,230,122	29,733,852	35.87	2.01	**17.76**
Energy Capital Partners								
Energy Capital Credit Solutions II	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.25**
GS Mezzanine Partners								
GS Mezzanine Partners 2006	100,000,000	113,445,143	912,430	134,654,263	9,858,563	5.00	1.19	**12.74**
GS Mezzanine Partners V	150,000,000	147,691,560	1,544,626	178,674,923	37,594,230	8.95	1.22	**11.19**
Gold Hill Venture Lending								
Gold Hill Venture Lending	40,000,000	40,000,000	338,870	65,077,862	0	10.69	1.64	**14.26**
Gold Hill 2008	25,852,584	25,852,584	4,482,755	44,745,145	0	14.48	1.90	**10.50**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Kohlberg Kravis Roberts								
KKR Lending Partners II	75,000,000	85,873,107	26,781,075	74,603,415	8,802,924	9.77	1.18	**3.82**
KKR Lending Partners III	199,000,000	61,121,183	63,609,390	8,990,663	141,578,676	22.63	1.19	**1.73**
LBC Credit Partners								
LBC Credit Partners IV	100,000,000	69,918,306	59,663,921	19,473,952	42,079,665	12.23	1.13	**2.67**
Merit Capital Partners								
Merit Mezzanine Fund IV	75,000,000	70,178,571	6,617,548	130,432,658	4,821,429	11.40	1.95	**14.05**
Merit Mezzanine Fund V	75,000,000	70,665,306	42,702,483	59,171,899	4,334,694	9.28	1.44	**9.04**
Merit Mezzanine Fund VI	100,000,000	43,216,782	46,986,461	1,865,672	56,716,418	8.57	1.13	**2.77**
Portfolio Advisors								
DLJ Investment Partners II	27,375,168	24,490,887	731	34,915,513	0	10.37	1.43	**19.01**
DLJ Investment Partners III	100,000,000	82,719,050	658,231	96,478,980	509,988	6.85	1.17	**12.53**
Prudential Capital Partners								
Prudential Capital Partners II	100,000,000	97,354,846	6,142,471	136,363,957	10,730,141	8.90	1.46	**13.51**
Prudential Capital Partners III	100,000,000	100,079,961	15,303,200	152,022,692	14,973,938	13.56	1.67	**9.71**
Prudential Capital Partners IV	100,000,000	104,961,436	63,650,807	68,819,926	5,659,203	9.40	1.26	**6.95**
Prudential Capital Partners V	150,000,000	75,568,478	78,475,791	10,314,967	76,516,927	17.07	1.17	**2.37**
Summit Partners								
Summit Subordinated Debt Fund III	45,000,000	44,088,494	3,667,253	60,443,093	2,250,000	8.95	1.45	**14.88**
Summit Subordinated Debt Fund IV	50,000,000	55,837,807	4,505,008	72,207,729	19,926,328	10.42	1.37	**10.76**
TCW Asset Management								
TCW Direct Lending VI	100,000,000	83,599,652	41,299,009	55,179,329	25,329,409	7.47	1.15	**4.28**
TCW Direct Lending VII	100,000,000	29,877,985	30,302,961	609,056	69,697,039	3.94	1.03	**0.96**
Private Credit Total	**2,437,227,752**	**1,670,651,645**	**580,296,857**	**1,676,292,734**	**948,448,800**	**12.02**	**1.35**	
III. REAL ASSETS								
BlackRock								
BlackRock Global Renewable Power Fund II	98,500,000	65,505,964	62,000,999	5,541,024	36,249,999	2.63	1.03	**3.10**
EIG Global Energy Partners								
EIG Energy Fund XIV	100,000,000	113,177,137	11,216,944	94,745,253	2,761,129	-2.25	0.94	**11.70**
EIG Energy Fund XV	150,000,000	158,255,504	73,122,815	112,818,096	22,871,323	4.40	1.17	**8.57**
EIG Energy Fund XVI	200,000,000	175,065,404	140,376,722	70,267,670	61,284,878	7.96	1.20	**5.30**
EnCap Energy								
EnCap Energy Capital Fund VII	100,000,000	105,357,255	7,320,987	134,445,165	0	14.86	1.35	**11.50**
EnCap Energy Capital Fund VIII	100,000,000	99,003,512	32,625,046	53,232,225	4,802,299	-4.25	0.87	**8.25**
Encap Energy Capital Fund IX	100,000,000	110,103,265	70,151,566	76,616,989	6,308,991	12.80	1.33	**6.06**
EnCap Energy Capital Fund X	100,000,000	84,943,785	79,155,149	17,605,463	22,842,958	8.13	1.14	**3.82**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
EnerVest Energy								
EnerVest Energy Institutional Fund XIV	100,000,000	94,238,649	101,444,708	39,158,126	13,854,417	17.58	1.49	**3.56**
Energy Capital Partners								
Energy Capital Partners II	100,000,000	85,329,367	15,413,266	110,405,699	29,749,110	10.74	1.47	**8.45**
Energy Capital Partners III	200,000,000	193,289,603	161,444,149	67,597,129	37,144,759	8.34	1.18	**5.03**
Energy Capital Partners IV	109,949,911	39,699,839	40,546,785	2,378,600	72,879,717	10.21	1.08	**1.00**
Energy & Minerals Group								
NGP Midstream & Resources	100,000,000	103,487,404	57,520,903	136,472,561	17,857	14.20	1.87	**11.76**
The Energy & Minerals Group Fund II	100,000,000	104,416,448	98,988,054	96,275,882	1,493,384	15.42	1.87	**7.27**
The Energy & Minerals Group Fund III	200,000,000	191,827,293	165,742,209	14,950,783	10,201,003	-1.55	0.94	**4.82**
The Energy & Minerals Group Fund IV	150,000,000	128,156,235	167,116,615	28,347,951	42,529,506	21.69	1.53	**3.17**
First Reserve								
First Reserve Fund X	100,000,000	100,000,000	355,449	182,429,002	0	31.05	1.83	**14.17**
First Reserve Fund XI	150,000,000	150,292,121	10,304,450	97,058,084	0	-6.79	0.71	**12.03**
First Reserve Fund XII	150,000,000	165,617,044	31,521,274	81,001,567	0	-8.65	0.68	**10.17**
First Reserve Fund XIII	200,000,000	151,737,042	119,682,366	60,693,925	70,933,826	11.90	1.19	**5.16**
Kohlberg, Kravis, Roberts & Co.								
KKR Global Infrastructure Investors III	149,850,000	10,382,858	10,382,858	0	139,467,142	0.00	1.00	**0.76**
Merit Energy Partners								
Merit Energy Partners B	24,000,000	24,000,000	3,486,992	187,926,750	0	24.28	7.98	**21.95**
Merit Energy Partners C	50,000,000	50,000,000	7,655,261	511,493,324	0	30.96	10.38	**20.18**
Merit Energy Partners D	88,000,000	70,938,303	13,747,497	331,762,805	0	22.58	4.87	**17.61**
Merit Energy Partners E	100,000,000	39,983,197	6,110,549	78,596,054	0	11.37	2.12	**14.25**
Merit Energy Partners F	100,000,000	59,522,861	10,647,970	28,351,202	0	-7.21	0.66	**12.78**
Merit Energy Partners H	100,000,000	100,000,000	66,049,194	29,668,582	0	-0.97	0.96	**7.91**
Merit Energy Partners I	169,721,518	169,721,518	195,634,429	35,839,059	0	14.56	1.36	**4.20**
Merit Energy Partners K	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.01**
NGP								
Natural Gas Partners IX	150,000,000	173,372,658	3,580,589	244,359,789	1,153,855	12.05	1.43	**11.19**
NGP Natural Resources X	150,000,000	143,027,285	55,045,758	105,041,058	6,972,715	3.47	1.12	**7.22**
Natural Gas Capital Resources XI	150,000,000	136,035,482	143,276,305	29,131,205	20,159,854	13.31	1.27	**4.06**
NGP Natural Resources XII	149,500,000	44,656,023	44,218,294	0	104,587,858	-1.14	0.99	**1.41**
Sheridan								
Sheridan Production Partners I	100,000,000	116,552,260	69,498,019	82,750,000	0	5.60	1.31	**11.76**
Sheridan Production Partners II	100,000,000	103,500,000	46,914,959	7,000,000	3,500,000	-11.23	0.52	**8.25**
Sheridan Production Partners III	100,000,000	34,353,005	36,012,991	16,800,000	65,650,000	20.92	1.54	**4.06**
Real Assets Total	**4,439,521,429**	**3,695,548,321**	**2,158,312,119**	**3,170,761,021**	**927,416,579**	**14.93**	**1.44**	

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
IV. REAL ESTATE								
Angelo, Gordon & Co.								
AG Realty Fund IX	100,000,000	85,141,582	90,735,744	13,500,000	18,650,000	11.14	1.22	**4.06**
AG Asia Realty Fund III	50,000,000	47,587,261	42,757,424	14,875,000	6,196,250	14.27	1.21	**2.25**
AG Europe Realty Fund II	75,000,000	37,144,581	36,786,975	28,384	37,500,000	-1.43	0.99	**1.53**
AG Realty Fund X	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.66**
AG Asia Realty Fund IV	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.56**
Blackstone Real Estate Partners								
Blackstone Real Estate Partners V	100,000,000	104,213,007	8,687,389	197,341,164	4,174,052	10.77	1.98	**12.68**
Blackstone Real Estate Partners VI	100,000,000	109,477,567	8,966,392	209,759,596	4,907,906	13.10	2.00	**11.76**
Blackstone Real Estate Partners VII	100,000,000	106,785,597	64,015,907	119,249,527	14,684,232	16.40	1.72	**7.09**
Blackstone Real Estate Partners VIII	150,000,000	131,604,185	121,079,410	43,801,037	54,773,950	14.43	1.25	**3.76**
Blackstone Real Estate Partners Asia II	74,500,000	9,911,135	9,009,520	20,015	65,236,779	-18.40	0.91	**1.27**
Blackstone Real Estate Partners IX	300,000,000	0	0	0	300,000,000	0.00	0.00	**0.27**
Blackstone Strategic Partners (CSFB)								
Strategic Partners III RE	25,000,000	25,988,048	1,820,166	13,806,432	9,006	-6.26	0.60	**13.50**
Strategic Partners IV RE	50,000,000	51,395,842	6,634,654	45,032,929	1,160,972	0.09	1.01	**10.54**
Carlyle Group								
Carlyle Realty Partners VIII	150,000,000	14,847,362	12,103,478	13,748	135,175,253	-33.33	0.82	**1.65**
Colony Capital								
Colony Investors III	100,000,000	99,660,860	3,265,600	173,372,105	0	14.51	1.77	**21.01**
Landmark Partners								
Landmark Real Estate Partners VIII	149,500,000	39,820,779	30,213,553	15,994,015	109,966,051	28.44	1.16	**2.04**
Lubert Adler								
Lubert-Adler Real Estate Fund VII-B	74,147,868	39,779,763	40,949,921	1,731,088	35,220,237	7.66	1.07	**2.23**
Rockpoint								
Rockpoint Real Estate Fund V	100,000,000	73,596,389	69,230,408	15,484,440	46,169,343	9.70	1.15	**3.97**
Rockpoint Real Estate Fund VI	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.03**
Rockwood								
Rockwood Capital RE Partners X	100,000,000	58,431,492	59,934,934	1,954,546	41,475,304	4.12	1.06	**3.46**
Silverpeak Real Estate Partners								
Silverpeak Legacy Pension Partners II	75,000,000	72,965,488	1,803,582	90,801,977	7,599,582	4.23	1.27	**13.42**
Silverpeak Legacy Pension Partners III	150,000,000	70,415,683	13,418,813	12,176,279	79,588,867	-11.24	0.36	**10.67**
T.A. Associates Realty								
Realty Associates Fund VIII	100,000,000	100,000,000	257,050	99,064,669	0	-0.08	0.99	**12.50**
Realty Associates Fund IX	100,000,000	100,000,000	53,973	160,200,687	0	10.43	1.60	**10.35**
Realty Associates Fund X	100,000,000	100,000,000	51,953,121	101,840,501	0	12.20	1.54	**6.83**
Realty Associates Fund XI	100,000,000	100,000,000	104,934,999	9,181,088	0	7.83	1.14	**3.50**
Realty Associates Fund XII	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.75**
Real Estate Total	**2,873,147,868**	**1,578,766,620**	**778,613,013**	**1,339,229,226**	**1,412,487,784**	**7.95**	**1.34**	

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
V. DISTRESSED/ OPPORTUNISTIC								
Avenue Capital Partners								
Avenue Energy Opportunities Fund	100,000,000	100,977,328	123,658,470	10,934,495	0	8.97	1.33	**4.50**
Avenue Energy Opportunities Fund II	100,000,000	100,000,000	107,140,600	417,420	0	8.97	1.08	**1.65**
BlackRock**								
BlackRock Tempus Fund	1,774,870	1,774,870	470,560	1,485,160	0	6.24	1.10	**3.55**
Carlyle Group								
Carlyle Strategic Partners IV	100,000,000	37,940,161	22,248,675	19,580,627	81,598,575	12.42	1.10	**2.75**
Carval Investors								
CVI Global Value Fund	200,000,000	190,000,000	9,210,230	311,161,915	10,000,000	9.54	1.69	**11.97**
CVI Credit Value Fund I	100,000,000	95,000,000	6,481,213	206,151,330	5,000,000	18.73	2.24	**8.25**
CVI Credit Value Fund A II	150,000,000	142,500,000	31,357,986	174,056,736	7,500,000	8.78	1.44	**6.17**
CVI Credit Value Fund A III	150,000,000	142,500,000	141,320,528	34,867,554	7,500,000	9.32	1.24	**3.58**
CVI Credit Value Fund IV	150,000,000	60,203,333	61,191,780	60	90,000,000	2.66	1.02	**1.24**
Merced Capital								
Merced Partners II	75,000,000	63,768,881	6,408	130,505,918	0	23.96	2.05	**11.75**
Merced Partners III	100,000,000	100,000,000	35,771,508	99,997,107	0	6.31	1.36	**8.65**
Merced Partners IV	125,000,000	124,968,390	89,376,275	66,852,033	0	6.04	1.25	**5.47**
Merced Partners V	53,737,500	53,915,358	53,579,780	0	0	-0.38	0.99	**1.50**
MHR Institutional Partners								
MHR Institutional Partners IV	75,000,000	34,871,892	30,778,131	3,343,007	43,412,535	-1.06	0.98	**4.53**
Oaktree Capital Management								
Oaktree Principal Fund VI	100,000,000	84,341,613	79,600,545	14,037,147	28,293,967	8.08	1.11	**4.00**
Oaktree Opportunities Fund X	50,000,000	46,500,000	49,164,414	8,119,660	8,500,000	14.25	1.23	**3.88**
Oaktree Opportunities Fund Xb	100,000,000	12,500,000	11,757,713	0	87,500,000	-9.41	0.94	**3.88**
Oaktree Special Situations Fund II	100,000,000	-10,149	0	0	100,000,000	0.00	0.00	**0.68**
Pimco Bravo**								
Pimco Bravo Fund OnShore Feeder I	3,958,027	3,958,027	130,803	3,978,735	2,348,173	3.61	1.04	**4.00**
Pimco Bravo Fund OnShore Feeder II	5,243,670	4,670,656	2,798,575	3,037,413	3,605,239	5.73	1.25	**4.00**
TSSP								
TSSP Adjacent Opportunities Partner	50,000,000	12,599,871	12,883,621	0	37,400,129	2.63	1.02	**0.74**
TSSP Adjacent Opportunities Contingent	100,000,000	70,318	70,318	0	99,929,682	0.00	1.00	**0.82**
TSSP Opportunities Partners IV	50,000,000	2,569,272	2,569,272	0	47,430,728	0.00	1.00	**0.64**
Varde Fund								
Varde Fund IX	100,000,000	100,000,000	874,597	215,051,276	0	15.00	2.16	**10.52**
Varde Fund X	150,000,000	150,000,000	50,316,999	236,984,272	0	11.76	1.92	**8.70**
Varde Fund XI	200,000,000	200,000,000	210,861,512	80,767,754	0	7.96	1.46	**5.47**
Varde Fund XIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.48**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Wayzata								
Wayzata Opportunities Fund II	150,000,000	174,750,000	6,051,672	322,403,595	30,000,000	16.45	1.88	**11.19**
Wayzata Opportunities Fund III	150,000,000	68,415,000	32,489,398	34,378,882	15,000,000	-0.75	0.98	**6.54**
Distressed/Opportunistic Total	**2,939,714,067**	**2,108,784,821**	**1,172,161,583**	**1,978,112,095**	**855,019,028**		**1.50**	
Private Markets Total	**26,860,562,356**	**18,046,348,838**	**10,015,033,002**	**16,832,870,431**	**10,006,596,080**	**12.26**	**1.50**	

Private Markets Portfolio Status	Investment Manager Count	Investments Count
PRIVATE EQUITY	50	129
PRIVATE CREDIT	12	25
REAL ASSETS	11	36
REAL ESTATE	11	27
DISTRESSED/ OPPORTUNISTIC	12	28
Total	96	245

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.

Data presented in this report is made public pursuant to Minn. Stat. Chs. 13 and 13D, and Minn. Stat. § 11A.24, subd. 6(c). Additional information on private markets investments may be classified as non-public and not subject to disclosure.

* 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, 2019

This page intentionally left blank.

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 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 Statewide Volunteer Firefighter Plan.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year	Option Since
BALANCED FUND	$456,477,419	9.7%	7.4%	9.2%	7.5%	11.4%	01/1980
U.S. ACTIVELY MANAGED FUND	266,745,336	15.5	9.5	14.6	10.5	16.3	07/1986
U.S. STOCK INDEX FUND	631,067,529	14.1	8.8	13.5	10.4	16.0	07/1986
BROAD INTERNATIONAL STOCK FUND	189,220,953	10.5	-4.4	7.9	2.9	9.3	09/1994
BOND FUND	173,925,697	3.4	4.9	2.7	3.2	5.2	07/1986
MONEY MARKET FUND	451,508,197	0.7	2.3	1.4	0.9	0.6	07/1986
STABLE VALUE FUND	1,582,227,982	0.6	2.5	2.2	2.1	2.7	11/1994
VOLUNTEER FIREFIGHTER ACCOUNT	104,961,884	7.8	4.8	7.4	5.7		01/2010
TOTAL SUPPLEMENTAL INVESTMENT FUND	3,856,134,997						

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
BALANCED FUND	**$456,477,419**	**9.7%**	**7.4%**	**9.2%**	**7.5%**	**11.4%**
SIF BALANCED FUND BENCHMARK		9.4	7.3	8.9	7.3	11.0
Excess		0.2	0.2	0.3	0.1	0.4

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
U.S. ACTIVELY MANAGED FUND	**266,745,336**	**15.5**	**9.5**	**14.6**	**10.5**	**16.3**
Russell 3000		14.0	8.8	13.5	10.4	16.0
Excess		1.5	0.7	1.2	0.2	0.3

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
U.S. STOCK INDEX FUND	**$631,067,529**	**14.1%**	**8.8%**	**13.5%**	**10.4%**	**16.0%**
Russell 3000		14.0	8.8	13.5	10.4	16.0
Excess		0.0	0.0	0.0	0.0	0.0

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).

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
BROAD INTERNATIONAL STOCK FUND	**189,220,953**	**10.5**	**-4.4**	**7.9**	**2.9**	**9.3**
International Equity Benchmark		10.3	-4.2	8.1	2.6	8.9
Excess		0.2	-0.2	-0.2	0.3	0.4

STATE STREET.

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
BOND FUND	**$173,925,697**	**3.4%**	**4.9%**	**2.7%**	**3.2%**	**5.2%**
BBG BARC US Agg		2.9	4.5	2.0	2.7	3.8
Excess		0.5	0.4	0.7	0.4	1.5

Money Market Fund

The investment objective of the Money Market Fund is to protect principal by investing in short-term, liquid U.S. Government securities. The Fund is invested entirely in high-quality, short-term U.S. Treasury and Agency securities. The average maturity of the portfolios is less than 90 days. Please note that the Market Value for the Money Market Fund reflects assets held through the Deferred Compensation Plan as well.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
MONEY MARKET FUND	**451,508,197**	**0.7**	**2.3**	**1.4**	**0.9**	**0.6**
90 DAY T-BILL		0.6	2.1	1.2	0.7	0.4
Excess		0.1	0.2	0.2	0.2	0.1

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
STABLE VALUE FUND	**$1,582,227,982**	**0.6%**	**2.5%**	**2.2%**	**2.1%**	**2.7%**
Fixed Interest Blended Benchmark		0.7	3.1	2.3	1.9	1.6
Excess		-0.1	-0.6	-0.0	0.2	1.1

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
VOLUNTEER FIREFIGHTER ACCOUNT	**104,961,884**	**7.8**	**4.8**	**7.4**	**5.7**	
SIF Volunteer Firefighter Account BM		7.8	4.8	7.0	5.4	
Excess		0.1	0.0	0.4	0.2	

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year	Option Since
VANGUARD INSTITUTIONAL INDEX PLUS	$1,290,144,640	13.7%	9.5%	13.5%	10.9%	15.9%	07/1999
VANGUARD DIVIDEND GROWTH	672,051,942	13.8	15.3				10/2016
VANGUARD MID CAP INDEX	551,904,976	16.8	6.0	11.6	8.9	16.7	01/2004
T. ROWE PRICE SMALL-CAP STOCK	754,142,629	17.6	11.8	16.2	9.8	18.7	04/2000
FIDELITY DIVERSIFIED INTERNATIONAL	283,964,619	11.2	-4.1	5.8	3.0	9.3	07/1999
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	199,816,077	10.3	-5.2	8.1	2.8		07/2011
VANGUARD BALANCED INDEX	798,739,423	9.6	7.4	9.0	7.4	11.2	12/2003
DODGE & COX INCOME	245,393,364	3.7	4.3	3.6	3.2	5.4	07/1999
VANGUARD TOTAL BOND MARKET INDEX	221,074,147	2.9	4.4	2.0	2.7	3.7	12/2003
2020 FUND	128,949,667	6.4	4.1	5.7	4.1		07/2011
2025 FUND	138,365,804	7.9	4.1	7.0	4.9		07/2011
2030 FUND	99,161,763	9.2	3.9	8.2	5.7		07/2011
2035 FUND	79,099,063	9.9	3.6	8.8	6.0		07/2011
2040 FUND	61,080,669	10.5	3.4	9.3	6.2		07/2011
2045 FUND	50,015,210	11.0	3.2	9.8	6.4		07/2011
2050 FUND	38,083,436	11.5	3.0	10.2	6.5		07/2011
2055 FUND	21,402,458	11.7	3.0	10.2	6.5		07/2011
2060 FUND	18,171,841	11.6	3.0	10.2	6.5		07/2011
INCOME FUND	90,824,539	6.1	4.1	5.0	3.5		07/2011
TD Ameritrade SDB	75,129,531						
TD Ameritrade SDB Roth	886,127						
Total Deferred Compensation Plan	5,818,401,921						

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	**$1,290,144,640**	**13.7%**	**9.5%**	**13.5%**	**10.9%**	**07/1999**
S&P 500		13.6	9.5	13.5	10.9	07/1999
Excess		0.0	-0.0	-0.0	-0.0	
VANGUARD DIVIDEND GROWTH	**672,051,942**	**13.8**	**15.3**			**10/2016**
NASDAQ US Dividend Achievers Select		12.5	10.8			10/2016
Excess		1.3	4.5			
Mid Cap US Equity						
VANGUARD MID CAP INDEX	**551,904,976**	**16.8**	**6.0**	**11.6**	**8.9**	**01/2004**
CRSP US Mid Cap Index		16.8	6.0	11.6	8.9	01/2004
Excess		-0.0	0.0	-0.0	-0.0	
Small Cap US Equity						
T. ROWE PRICE SMALL-CAP STOCK	**754,142,629**	**17.6**	**11.8**	**16.2**	**9.8**	**04/2000**
Russell 2000		14.6	2.0	12.9	7.1	04/2000
Excess		3.0	9.8	3.3	2.8	
International Equity						
FIDELITY DIVERSIFIED INTERNATIONAL	**283,964,619**	**11.2**	**-4.1**	**5.8**	**3.0**	**07/1999**
MSCI EAFE FREE (NET)		10.0	-3.7	7.3	2.3	07/1999
Excess		1.3	-0.3	-1.5	0.6	
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	**199,816,077**	**10.3**	**-5.2**	**8.1**	**2.8**	**07/2011**
FTSE Global All Cap ex US Index Net		10.2	-5.0	7.8	2.7	07/2011
Excess		0.1	-0.2	0.3	0.1	

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	**$798,739,423**	**9.6%**	**7.4%**	**9.0%**	**7.4%**	**12/2003**
Vanguard Balanced Fund Benchmark		9.6	7.4	9.0	7.4	12/2003
Excess		0.0	0.0	-0.0	-0.0	
Fixed Income						
DODGE & COX INCOME	**245,393,364**	**3.7**	**4.3**	**3.6**	**3.2**	**07/1999**
BBG BARC Agg Bd		2.9	4.5	2.0	2.7	07/1999
Excess		0.8	-0.2	1.6	0.4	
VANGUARD TOTAL BOND MARKET INDEX	**221,074,147**	**2.9**	**4.4**	**2.0**	**2.7**	**12/2003**
BBG BARC Agg Bd		2.9	4.5	2.0	2.7	12/2003
Excess		-0.0	-0.1	-0.1	-0.1	
MONEY MARKET FUND	**451,508,197**	**0.7**	**2.3**	**1.4**	**0.9**	**07/1986**
90 DAY T-BILL		0.6	2.1	1.2	0.7	07/1986
Excess		0.1	0.2	0.2	0.2	
Stable Value						
STABLE VALUE FUND	**1,582,227,982**	**0.6**	**2.5**	**2.2**	**2.1**	**11/1994**
Fixed Interest Blended Benchmark		0.7	3.1	2.3	1.9	11/1994
Excess		-0.1	-0.6	-0.0	0.2	

(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 opitons 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 decison by investing their assets in the fund that is closest to their anticipated retirement date.

Target Date Retirement Funds

SSgA

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
2020 FUND	**$128,949,667**	**6.4%**	**4.1%**	**5.7%**	**4.1%**	**07/2011**
2020 FUND BENCHMARK		6.4	4.1	5.7	4.1	07/2011
Excess		-0.0	-0.0	-0.0	-0.0	
2025 FUND	**138,365,804**	**7.9**	**4.1**	**7.0**	**4.9**	**07/2011**
2025 FUND BENCHMARK		7.9	4.2	7.0	4.9	07/2011
Excess		-0.0	-0.0	-0.0	-0.0	
2030 FUND	**99,161,763**	**9.2**	**3.9**	**8.2**	**5.7**	**07/2011**
2030 FUND BENCHMARK		9.2	3.9	8.3	5.7	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	
2035 FUND	**79,099,063**	**9.9**	**3.6**	**8.8**	**6.0**	**07/2011**
2035 FUND BENCHMARK		9.9	3.7	8.8	6.0	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	
2040 FUND	**61,080,669**	**10.5**	**3.4**	**9.3**	**6.2**	**07/2011**
2040 FUND BENCHMARK		10.5	3.5	9.4	6.2	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
2045 FUND	**$50,015,210**	**11.0%**	**3.2%**	**9.8%**	**6.4%**	**07/2011**
2045 FUND BENCHMARK		11.1	3.3	9.8	6.4	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	
2050 FUND	**38,083,436**	**11.5**	**3.0**	**10.2**	**6.5**	**07/2011**
2050 FUND BENCHMARK		11.6	3.1	10.2	6.6	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	
2055 FUND	**21,402,458**	**11.7**	**3.0**	**10.2**	**6.5**	**07/2011**
2055 FUND BENCHMARK		11.7	3.1	10.2	6.5	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	
2060 FUND	**18,171,841**	**11.6**	**3.0**	**10.2**	**6.5**	**07/2011**
2060 FUND BENCHMARK		11.7	3.1	10.2	6.5	07/2011
Excess		-0.0	-0.1	-0.0	-0.0	
INCOME FUND	**90,824,539**	**6.1**	**4.1**	**5.0**	**3.5**	**07/2011**
INCOME FUND BENCHMARK		6.1	4.1	5.0	3.5	07/2011
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

TIAA

MINNESOTA COLLEGE SAVINGS PLAN **Total Market Value = $1.4 billion**

Performance Statistics for the Period Ending: March 29, 2019

Fund Name	Ending Market	3 Months	1 Year	Annualized 3 Years	5 Years	10 Years	Since Inception	Inception Date
Managed Ages 0-4	$35,601,111	11.19%	5.34%	9.52%			6.88%	8/12/2014
BM: Managed Ages 0-4		11.14%	5.71%	9.63%			6.98%	
Managed Ages 5-8	$70,063,654	10.21%	5.40%	8.66%			6.31%	8/12/2014
BM: Managed Ages 5-8		10.15%	5.61%	8.75%			6.44%	
Managed Ages 9-10	$62,942,990	9.19%	5.20%	7.76%			5.74%	8/12/2014
BM: Managed Ages 9-10		9.16%	5.49%	7.87%			5.89%	
Managed Ages 11-12	$94,538,784	8.16%	4.83%	6.82%			5.10%	8/12/2014
BM: Managed Ages 11-12		8.04%	5.23%	6.91%			5.25%	
Managed Ages 13-14	$130,763,405	7.07%	4.61%	5.91%			4.50%	8/12/2014
BM: Managed Ages 13-14		6.92%	4.96%	5.96%			4.60%	
Managed Age 15	$83,805,808	5.41%	4.03%	4.87%			3.79%	8/12/2014
BM: Managed Age 15		5.52%	4.44%	4.86%			3.78%	
Managed Age 16	$84,995,205	4.76%	3.73%	4.32%			3.39%	8/12/2014
BM: Managed Age 16		4.76%	4.12%	4.28%			3.32%	
Managed Age 17	$84,310,977	4.08%	3.42%	3.81%			3.04%	8/12/2014
BM: Managed Age 17		4.00%	3.80%	3.70%			2.87%	
Managed Ages 18 & Over	$210,477,616	3.19%	3.38%	3.33%			2.69%	8/12/2014
BM: Managed Ages 18 & Over		3.25%	3.47%	3.12%			2.41%	
U.S. and International Equity Option	$293,836,145	13.20%	5.72%	11.24%	7.96%	14.00%	6.93%	10/ 1/2001
BM: U.S. and International Equity Option		13.13%	5.86%	11.38%	8.07%	14.34%	7.79%	

MINNESOTA COLLEGE SAVINGS PLAN

Performance Statistics for the Period Ending: March 29, 2019

Fund Name	Ending Market	3 Months	1 Year	Annualized 3 Years	5 Years	10 Years	Since Inception	Inception Date
Moderate Allocation Option	$69,877,116	9.21%	5.19%	7.73%	5.85%	9.66%	5.18%	8/ 2/2007
BM: Moderate Allocation Option		9.16%	5.49%	7.87%	6.06%	10.21%	5.73%	
100% Fixed-Income Option	$15,823,666	3.40%	4.27%	2.22%	2.47%	3.37%	3.50%	8/16/2007
BM: 100% Fixed-Income Option		3.31%	4.33%	2.50%	2.77%	3.80%	4.13%	
International Equity Index Option	$4,816,188	10.09%	-4.81%	8.04%	2.55%		4.16%	6/18/2013
BM: International Equity Index Option		9.97%	-4.42%	8.00%	2.67%		4.40%	
Money Market Option	$11,893,238	0.48%	1.83%	0.93%	0.56%	0.22%	0.47%	11/ 1/2007
BM: Money Market Option		0.49%	1.67%	0.82%	0.50%	0.27%	0.48%	
Principal Plus Interest Option	$119,063,611	0.52%	1.85%	1.63%	1.48%	1.82%	2.51%	10/10/2001
Citigroup 3-Month U.S. Treasury Bill		0.60%	2.11%	1.17%	0.72%	0.41%	1.31%	
Aggressive Allocation Option	$27,641,094	11.11%	5.26%	9.57%			6.86%	8/12/2014
BM: Aggressive Allocation Option		11.14%	5.71%	9.63%			6.98%	
Conservative Allocation Option	$10,165,955	5.56%	3.97%	4.85%			3.61%	8/18/2014
BM: Conservative Allocation Option		5.52%	4.44%	4.86%			3.63%	
Equity and Interest Accumulation Option	$3,946,231	6.71%	5.31%	7.42%			5.65%	8/18/2014
BM: Equity and Interest Accumulation Option		7.21%	5.74%	7.33%			5.49%	
U.S. Large Cap Equity Option	$30,608,695	13.58%	9.31%	13.27%			10.63%	8/12/2014
BM: U.S. Large Cap Equity Option		13.65%	9.50%	13.51%			10.87%	
Matching Grant	$2,381,376	0.52%	1.85%	1.63%	1.48%	1.82%	2.53%	3/22/2002
Citigroup 3-Month U.S. Treasury Bill		0.60%	2.11%	1.17%	0.72%	0.41%	1.29%	

MINNESOTA ABLE plan

A member of The National ABLE Alliance

Performance as of
03/31/19

Total Market Value: $ **5,388,651**

Fund Name		Market Value	% of Plan	1 Month	3 Months	YTD	1 Year	3 Year	5 Year	10 Year	Inception	Inception Date
Aggressive Option	$	538,348	9.99%	0.91	12.41	12.41	4.98				9.18	12/15/16
ABLE Aggressive Custom Benchmark				0.89	12.54	12.54	5.50				9.80	
Variance				**0.02**	**(0.13)**	**(0.13)**	**(0.52)**				**(0.62)**	
Moderately Aggressive Option	$	501,758	9.31%	1.02	10.66	10.66	4.74				8.04	12/15/16
ABLE Moderately Aggressive Custom Benchmark				0.94	10.81	10.81	5.39				8.67	
Variance				**0.08**	**(0.15)**	**(0.15)**	**(0.65)**				**(0.63)**	
Growth Option	$	714,645	13.26%	1.04	8.98	8.98	4.58				6.89	12/15/16
ABLE Growth Custom Benchmark				1.00	9.09	9.09	5.18				7.51	
Variance				**0.04**	**(0.11)**	**(0.11)**	**(0.60)**				**(0.62)**	
Moderate Option	$	626,598	11.63%	1.16	7.16	7.16	4.22				5.76	12/15/16
ABLE Moderate Custom Benchmark				1.07	7.37	7.37	4.88				6.31	
Variance				**0.09**	**(0.21)**	**(0.21)**	**(0.66)**				**(0.55)**	
Moderately Conservative Option	$	572,974	10.63%	0.92	5.05	5.05	3.57				4.33	12/15/16
ABLE Moderately Conservative Custom Benchmark				0.88	5.24	5.24	4.16				4.81	
Variance				**0.04**	**(0.19)**	**(0.19)**	**(0.59)**				**(0.48)**	
Conservative Option	$	792,733	14.71%	0.57	2.23	2.23	2.52				2.40	12/15/16
ABLE Conservative Custom Benchmark				0.59	2.39	2.39	3.04				2.75	
Variance				**(0.02)**	**(0.16)**	**(0.16)**	**(0.52)**				**(0.35)**	
Checking Option	$	1,641,595	30.46%									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.

ascensus™ | college savings

Non-Retirement

March 31, 2019

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 trusteed by the Public Employees Retirement Association.
- Miscellanous 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

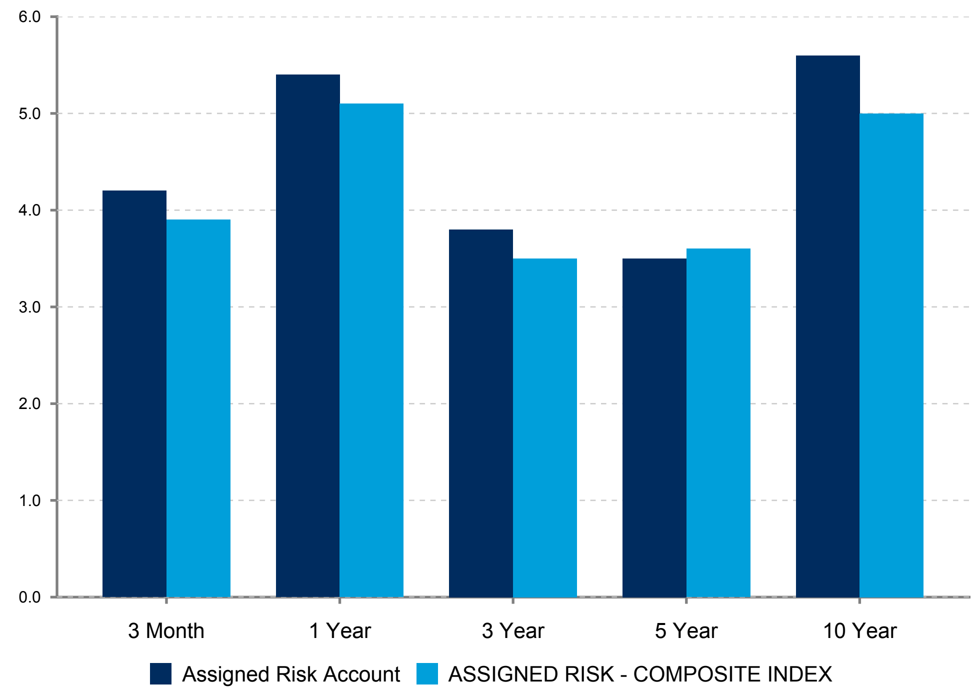
Assigned Risk Plan

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.

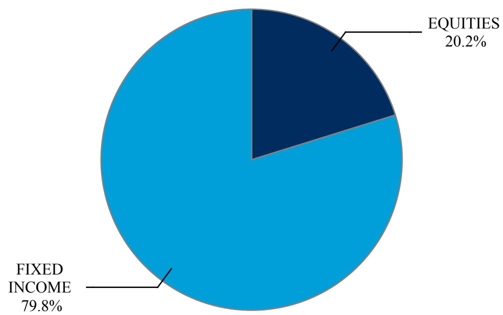
The Assigned Risk Plan is invested in a portfolio of common stocks and bonds

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	$282,221,913	4.2%	5.4%	3.8%	3.5%	5.6%
EQUITIES	56,963,351	13.6	9.5	13.9	9.9	14.8
FIXED INCOME	225,258,562	1.6	3.7	1.0	1.7	3.2
ASSIGNED RISK - COMPOSITE INDEX		3.9	5.1	3.5	3.6	5.0
Excess		0.2	0.2	0.3	-0.0	0.7
S&P 500		13.6	9.5	13.5	10.9	15.9
BBG BARC US Gov: Int		1.6	3.8	1.0	1.7	2.0



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.

STATE STREET.

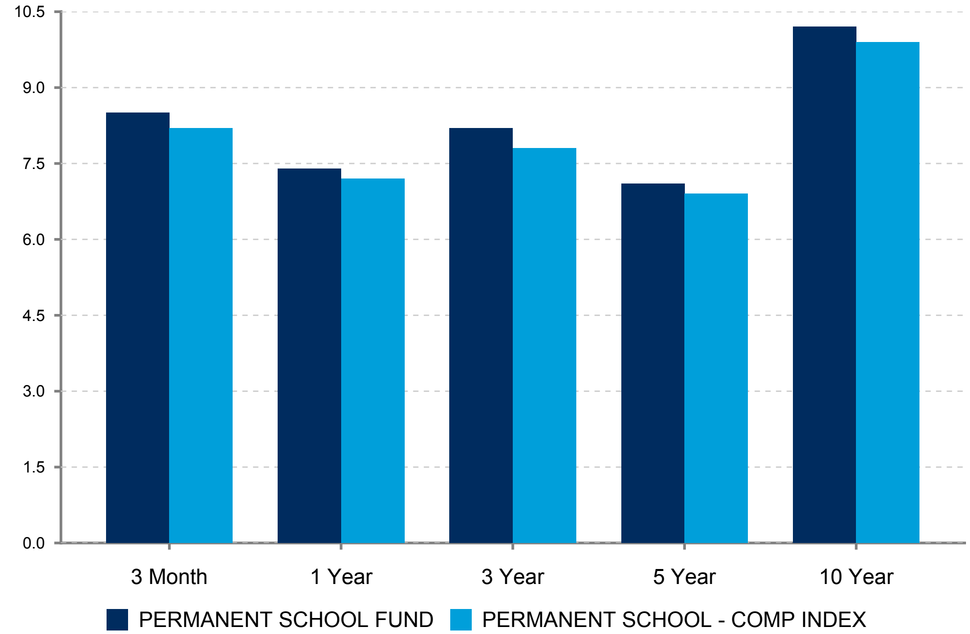
Non-Retirement

Permanent School Fund

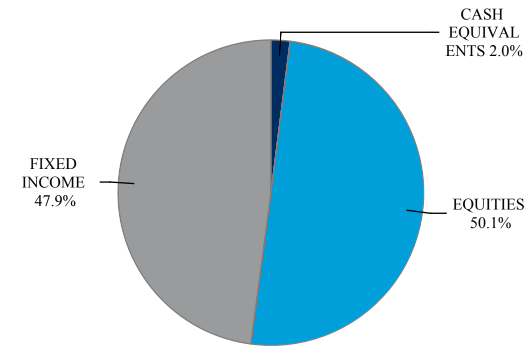
The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

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	$1,463,284,002	8.5%	7.4%	8.2%	7.1%	10.2%
CASH EQUIVALENTS	28,844,267	0.6	2.2	1.3	0.8	0.6
EQUITIES	733,253,930	13.6	9.5	13.5	10.9	15.9
FIXED INCOME	701,185,806	3.4	5.0	2.6	3.1	4.4
PERMANENT SCHOOL - COMP INDEX		8.2	7.2	7.8	6.9	9.9
Excess		0.3	0.2	0.4	0.2	0.3
S&P 500		13.6	9.5	13.5	10.9	15.9
BBG BARC US Agg		2.9	4.5	2.0	2.7	3.8



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.

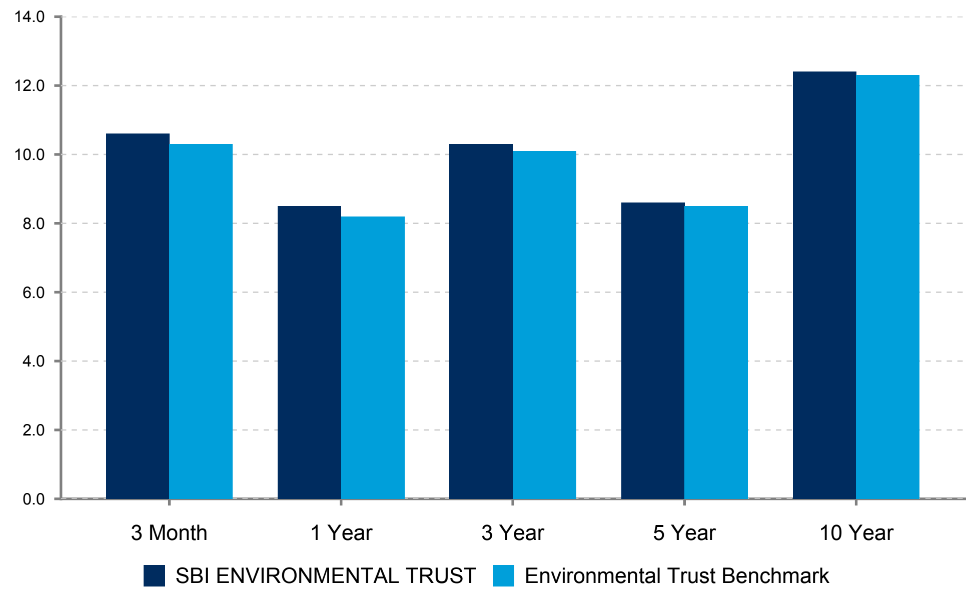
Non-Retirement

Environmental Trust Fund

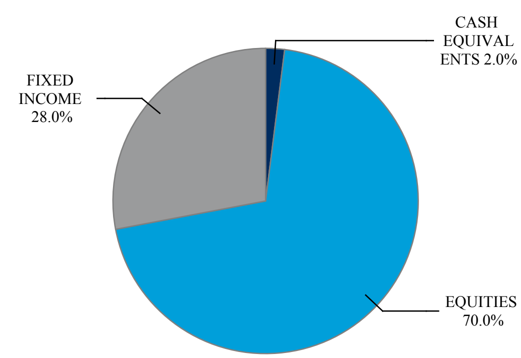
The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

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	$1,172,383,879	10.6%	8.5%	10.3%	8.6%	12.4%
CASH EQUIVALENTS	23,079,568	0.6	2.2	1.3	0.8	0.6
EQUITIES	821,598,006	13.6	9.5	13.5	10.9	15.9
FIXED INCOME	327,706,305	3.4	5.0	2.6	3.1	4.4
Environmental Trust Benchmark		10.3	8.2	10.1	8.5	12.3
Excess		0.2	0.2	0.2	0.1	0.2
S&P 500		13.6	9.5	13.5	10.9	15.9
BBG BARC US Agg		2.9	4.5	2.0	2.7	3.8



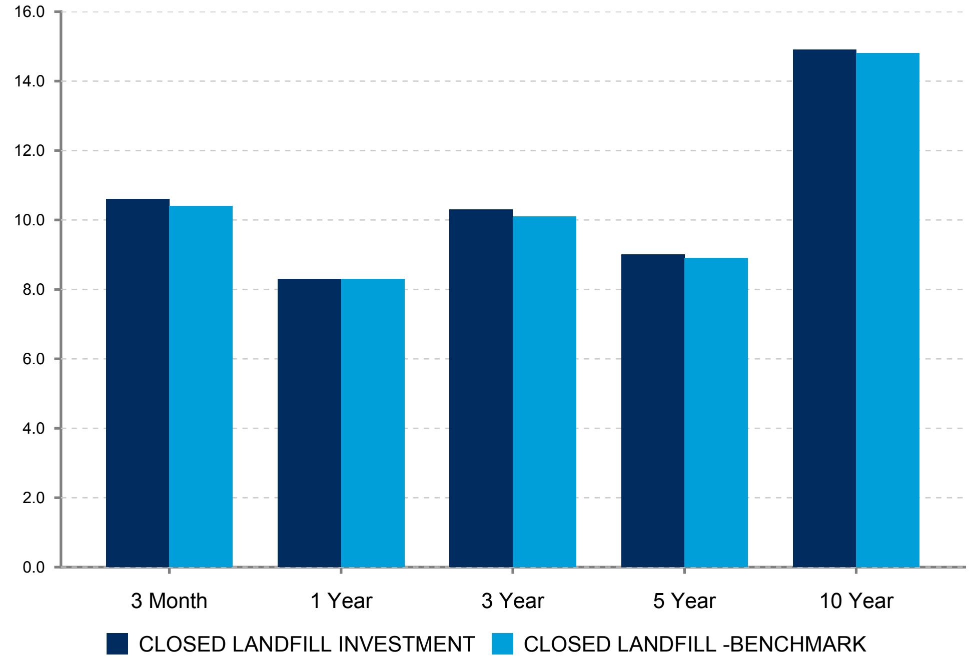
Note: Since 12/1/2017 the equity segment has been managed by Mellon and the fixed income segment by Prudential. Prior to 12/1/2017 both segments were managed internally by SBI staff. From 7/1/94 to 7/1/99, the Fund's target allocation and benchmark was 50% fixed income and 50% stock. Prior to 7/1/94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

Non-Retirement

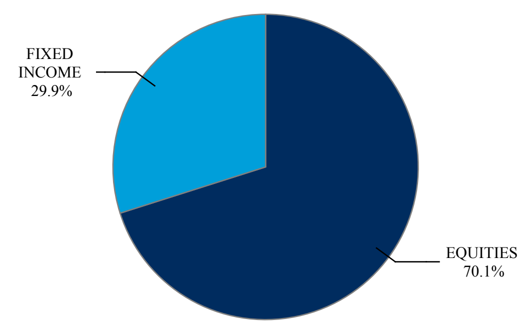
Closed Landfill Investment Fund

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	$93,092,970	10.6%	8.3%	10.3%	9.0%	14.9%
EQUITIES	65,251,361	13.6	9.5	13.5	10.9	15.9
FIXED INCOME	27,841,609	3.4	5.0	2.6		
CLOSED LANDFILL -BENCHMARK		10.4	8.3	10.1	8.9	14.8
Excess		0.3	0.1	0.2	0.1	0.0
S&P 500		13.6	9.5	13.5	10.9	15.9
BBG BARC US Agg		2.9	4.5	2.0	2.7	3.8



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.

STATE STREET

	Ending Market Value	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
NON RETIREMENT EQUITY INDEX - MELLON	**2,289,575,726**	**13.6**	**5.9**	**9.5**	**13.5**	**10.9**	**15.9**	**9.6**	**07/1993**
S&P 500 INDEX (DAILY)		13.6	5.9	9.5	13.5	10.9	15.9	9.5	07/1993
Excess		-0.0	-0.0	-0.0	-0.0	0.0	-0.0	0.1	
NON RETIREMENT FIXED INCOME - PRUDENTIAL	**1,223,551,023**	**3.4**	**5.1**	**5.0**	**2.6**	**3.1**	**4.4**	**5.9**	**07/1994**
BBG BARC Agg (Dly)		2.9	4.6	4.5	2.0	2.7	3.8	5.4	07/1994
Excess		0.5	0.4	0.5	0.6	0.4	0.7	0.5	
RBC	**225,258,520**	**1.6**	**3.6**	**3.7**	**1.0**	**1.7**	**3.2**	**4.8**	**07/1991**
RBC Custom Benchmark		1.6	3.7	3.8	1.0	1.7	2.1	4.9	07/1991
Excess		-0.0	-0.1	-0.1	0.1	0.1	1.2	-0.1	
MET COUNCIL OPEB BOND POOL	77,269,482	1.3	2.9	3.5					02/2009
NON RETIREMENT CASH	**169,015,285**	**0.6**	**1.8**	**2.2**	**1.3**	**0.8**	**0.6**	**2.7**	
iMoneyNet Money Fund Average-All Taxable		0.5	1.4	1.7	0.9	0.5	0.3		
Excess		0.1	0.4	0.5	0.4	0.3	0.3		

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.

This page intentionally left blank.

State Cash

March 31, 2019

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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
Treasurer's Cash	11,591,310,571	0.7	2.4	1.5	1.1	1.0
iMoneyNet Money Fund Average-All Taxable		0.5	1.7	0.9	0.5	0.3

Other State Cash Accounts

Due to differing investment objectives, strategies, and time horizons, some State agencies' accounts are invested seperately. 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.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
Debt Service	99,210,826	2.1	4.6	2.2	2.7	
Housing Finance	145,773,756	0.7	2.6	1.3	1.8	
Public Facilities Authority	60,675,586	0.9	2.3	1.9	2.3	

STATE STREET

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), including from 10/1/01 to 5/31/02 when it was the Provisional MSCI Emerging Markets Free (net). Prior to 1/1/01, it was the MSCI Emerging Markets Free (gross).

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. 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 1/1/2018-2/28/2019 the Transitional Policy Target was used to reflect the addition of Treasuries to the Fixed Income portfolio. 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:

Since 1/1/2019 the benchmark is 90% Russell 1000 and 10% Russell 2000. From 10/1/2003 to 12/31/2018 it was the Russell 3000. 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 1/1/2019 the benchmark is 75% MSCI World ex USA Index (net) and 25% MSCI Emerging Markets Index (net). From 6/1/08 to 12/31/2018 the International Equity asset class target was 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:

60.3% Russell 1000, 6.7% Russell 2000, 24.75% MSCI World Ex US (net), and 8.25% MSCI EM (net) effective 1/1/2019. From 7/1/2017 thru 12/31/2018 it was 67% Russell 3000 and 33% MSCI ACWI ex USA. 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 the 67% and 33% weighting.

Semi-Passive Domestic Equity Benchmark:

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