MINNESOTA STATE BOARD OF INVESTMENT

MINNESOTA STATE BOARD
OF INVESTMENT
MEETING
December 2, 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

December 2, 2019

This page intentionally left blank.

AGENDA
STATE BOARD OF INVESTMENT MEETING
Monday, December 2, 2019
2:00 P.M.
G23 Senate Committee Room
State Capitol
75 Rev. Dr. Martin Luther King Jr. Boulevard
St. Paul, MN

		TAB
1.	**Approval of Minutes of August 22, 2019**	
2.	**Report from the Executive Director**	
	A. Quarterly Performance Summary (July 1, 2019 – September 30, 2019)	**A**
	B. Administrative Report 1. Reports on Budget and Travel 2. FY19 Audit Report 3. Draft of FY19 Annual Report 4. Meeting Dates for Calendar 2020 5. Sudan Update 6. Iran Update 7. Litigation Update	**B**
	C. TUCS Comparison Observations	**C**
3.	**Private Markets Program Report and Consideration of Commitments**	**D**
4.	**Proposed Statutory Amendments to Investment Authority**	**E**

REPORTS

5.	**Report of Public Markets, Non-Retirement, and Participant Directed Investment Programs**	**F**
6.	**AON Market Environment Report**	**G**
7.	**Meketa Capital Markets Outlook & Risk Metrics Report**	**H**
8.	**Comprehensive Performance Report**	**I**
9.	**Other Items**	

This page intentionally left blank.

Minutes
State Board of Investment
August 22, 2019

The State Board of Investment (SBI) met at 10:04 a.m. Thursday, August 22, 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 May 30, 2019 meeting were approved.

Executive Director's Report

Mr. Perry referred members to Tab A of the meeting materials and stated that as of June 30, 2019 the SBI was responsible for managing approximately $101 billion of assets. Mr. Perry reported that the Combined Funds had outperformed its Composite Index over the ten-year period ending June 30, 2019 (Combined Funds 10.9% vs. Combined Funds-Composite Index 10.5%) and had provided a real rate of return of 4.4% above inflation over the latest 20 year period (Combined Funds 6.5% vs. 2.2%).

Mr. Perry stated that the assets increased over the quarter (Combined Funds ending value of $70.7 billion versus a beginning value of $68.8 billion), due primarily to investment returns. The Combined Funds matched the benchmark for the quarter (Combined Funds 3.6% vs. Combined Funds-Composite Index 3.6%) and underperformed for the year (Combined Funds 7.3% vs. Combined Funds-Composite Index 7.6%). The Combined Funds outperformed the benchmark return in all other time periods reported.

Mr. Perry stated that the combined public equity performance underperformed the benchmark for the year end (Public Equity 6.1% vs. Public Equity Benchmark 6.4%). Breaking it down between domestic and international equities, domestic equities underperformed its benchmark for the year (Domestic Equity 8.5% vs. Domestic Equity Benchmark 8.9%). The longer term returns were mixed as the domestic equity manager group outperformed the benchmark performance for the three-year, underperformed the five and twenty-year returns and matched the ten-year period. The international equity manager group underperformed its target for the year (International Equity 1.1% vs. International Equity Benchmark 1.3%), the three-year period underperformed and all other time periods reported outperformed. Mr. Perry continued on with the fixed income segment, which had outperformed for the year (Fixed Income 8.2% vs. Fixed Income Benchmark 7.9%) and all other time periods reported. He reported that although the Treasury portfolio slightly underperformed its target for the year (Treasuries 10.3% vs. Treasuries Benchmark 10.4%) it was the second highest performing asset class for the year. Lastly, Mr. Perry stated that the Private Markets program was the best performing asset class for the year with a 10.4% return.

Mr. Perry stated that the Combined Fund traditional asset allocation is within the policy ranges. He also reminded the Board that the Strategic Allocation Category Framework takes a different lens to the asset allocation. In this framework, the Growth - Appreciation category continues to be the largest weight. He noted that relative to our volatility equivalent benchmark that all of the things the SBI does in managing the program have continued to add value. The last investment item is the comparison of the Combined Funds return to other public and corporate funds over $1 billion in assets. The Combined Funds return was in the top decile for three year, top quartile for five and ten year, and in the second quartile for the other time periods listed.

Mr. Perry referred members to Tab B of the meeting materials for the Administrative Report. Mr. Perry noted that the 2019 fiscal year end expenses came in under budget, primarily from being under staffed. This should be rectified in the coming year. The second item of the Administrative Report was a recap of the transition that occurred in the Participant Directed Investment Program at the end of the fiscal year. Three plans, the Hennepin County Supplemental Retirement Fund, Health Care Savings Plan, and Unclassified Retirement Plan, transferred their assets from the Supplemental Investment platform to the mutual fund line-up similar to the Minnesota Deferred Compensation Plan. Lastly, Mr. Perry referenced the summary update on restrictions for Sudan and Iran and stated that the SBI was not involved in any litigation.

Attorney General Ellison inquired about the volatility in the market as the result of recent economic forecasts and what the potential impact is to the retirement assets. Mr. Perry commented that the SBI is strategic with its asset allocation versus being tactical which is more market timing. He added that during the roundtable discussion at the last Investment Advisory Council (IAC) meeting some member's commented on the Combined Funds large exposure to equities and that we may be bringing forth some asset allocation changes. Attorney General Ellison noted that we have an inverted yield curve. Mr. Perry responded that an inverted yield curve historically has been a signal that a recession is looming. He noted his concerns that there has been some discussion of negative interest rates and ponders what that will mean for the SBI. Staff will be doing more work around this and other options so that the SBI will have more flexibility in positioning the portfolio.

Attorney General Ellison requested that Mr. Perry comment as to how climate risk factors are addressed by staff. Mr. Perry acknowledged that it is a risk that staff is aware of, and accordingly, are working to identify reputable organizations with experience to help in the SBI's engagement initiatives. Secretary of State Simon asked Mr. Perry to comment on a New York Times article where top Chief Executive Officer's (CEO's) issued a statement saying they're going to focus on things other than just shareholder value. Mr. Perry noted that as an asset owner the focus is on returns and that this statement does provide some confidence that CEO's are now taking into consideration how we, as stakeholders, vote our proxies. Governor Walz commented on the intersection between values, ethics, and fiduciary responsibility to retirees and pensions when looking at proposals. He agreed that climate change is real and there has to be more than just the bottom line to shareholders. Governor Walz appreciates all of the work being done starting with the important discussions they are having and Mr. Perry's on-going work. He looks forward to when the SBI can bring the work they are doing on climate change into the legislative discussion to help form policies that will impact the decision that are made by this Board.

Mr. Martin, Chairperson of the Investment Advisory Council, referred members to Tab C and reviewed the six private markets proposals, the first three of which are existing managers: Lexington Partners Fund CIP V (Private Equity), BlackRock Fund GRP III (Real Assets); Angelo Gordon Fund GRP III (Real Estate). The last three of which are new managers: Wind Point Partners Fund WPP IX (Private Equity), Whitehorse Liquidity Partners Fund III (Private Equity); and Marathon Asset Management Fund MSPS II (Private Credit). State Auditor Blaha moved approval and Secretary of State Simon seconded the motion of the six recommendations 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 $300 million, or 20% of Lexington Co-Investment 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 Lexington Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Lexington Partners or reduction or termination of the commitment.**

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to $100 million, or 20% of GRP III, 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 BlackRock upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on BlackRock or reduction or termination of the commitment.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to $75 million, or 20% of AG Europe Realty Fund III, 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 Angelo Gordon upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Angelo Gordon 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 Wind Point Partners IX-A, 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 Wind Point 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 Wind Point 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 Whitehorse Liquidity Partners Fund III, 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 Whitehorse 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 Whitehorse 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 Marathon Secured Private Strategies Fund II, 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 Marathon 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 Marathon or reduction or termination of the commitment." The motion passed unanimously.

Mr. Stoffel, Executive Director for the Teachers' Retirement Association and Co-Chair of the Compensation Review Committee, referred members to Tab D and presented on the information the committee considered to make their recommendation. Secretary of State Simon moved approval and Attorney General Ellison seconded the motion of the Compensation Review Committee's recommendation which reads: **"Approve a market-based adjustment to the**

annual base salary of the SBI Executive Director/Chief Investment Officer to $419,000, effective September 4, 2019." The motion passed unanimously.

Mr. Perry directed the Board to the remaining reports in the book, first noting the report of the Public Markets Program, the Non-Retirement and Participant Directed Investments. He then noted the two consultant reports, AON's Market Environment Report and Meketa's Investment Market Risk Report. Lastly, he pointed to the SBI's Comprehensive Performance Report.

Governor Walz recognized members of the public who had requested to speak before the Board. Mr. Aadarsh Akula of Minnesota Immigration Rights Action Committee and Ms. Autumn Lake of Minnesota Anti-War Committee spoke to the Board with a request that the Board divest from Elbit Systems.

Meeting adjourned at 10:47 a.m.

Respectfully submitted,

Mansco Perry III

Mansco Perry III
Executive Director and
Chief Investment Officer

This page intentionally left blank.

TAB A

Report from the Executive Director

Quarterly Performance Summary

This page intentionally left blank.

Quarterly Report

Performance Summary

September 30, 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

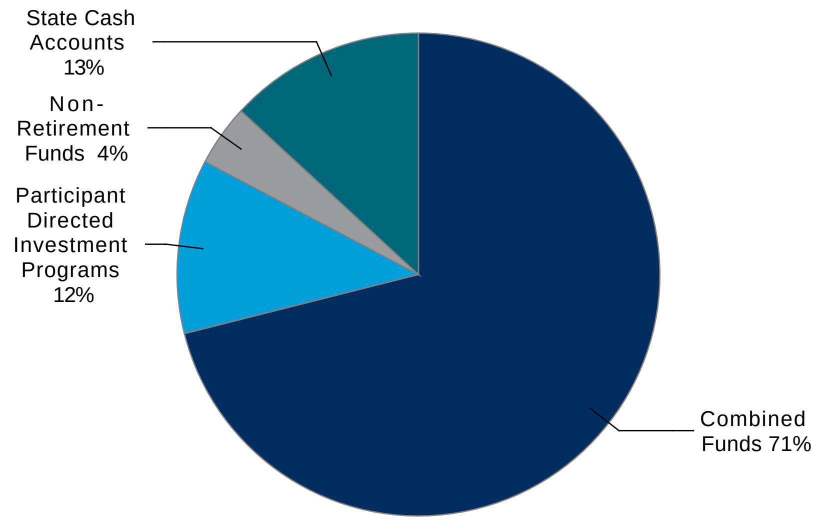
The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

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	$70,691
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	2,928
Mutual Funds**	7,188
Minnesota College Savings Plan	1,493
Achieve a Better Life Experience	7
NON-RETIREMENT FUNDS	
Assigned Risk Plan	288
Permanent School Fund	1,544
Environmental Trust Fund	1,232
Closed Landfill Investment Fund	99
Miscellaneous	263
Other Post Employment Benefits Accounts	668
STATE CASH ACCOUNTS	
Treasurer's Cash	12,911
Other State Cash Accounts	166
TOTAL	
SBI AUM	99,478



* 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 Mutual Funds 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	9.7%
COMBINED FUNDS - COMPOSITE INDEX	9.4
Excess	0.3

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	6.7%
CPI-U	2.1
Excess	4.6

Note:

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

STATE STREET.

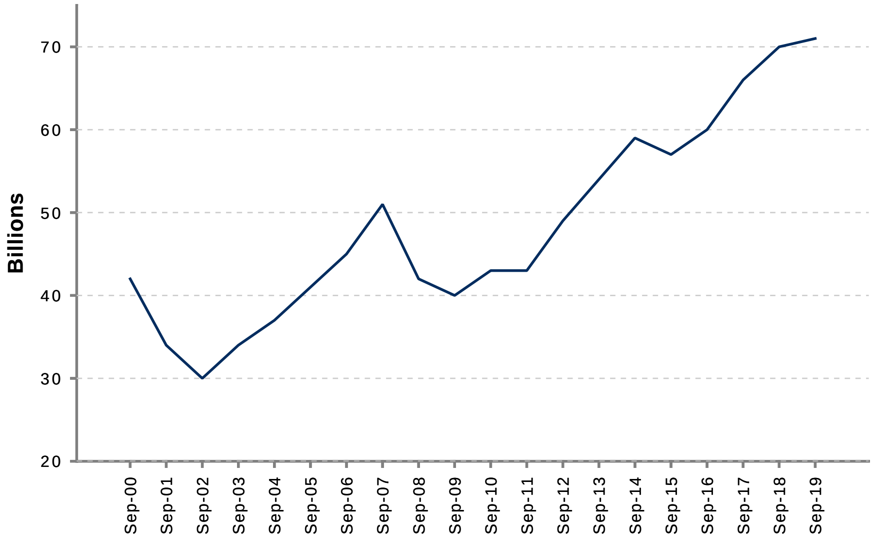
Combined Funds Summary

Combined Funds Change in Market Value ($Millions)

	One Quarter
COMBINED FUNDS	
Beginning Market Value	$70,658
Net Contributions	-655
Investment Return	687
Ending Market Value	70,691

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

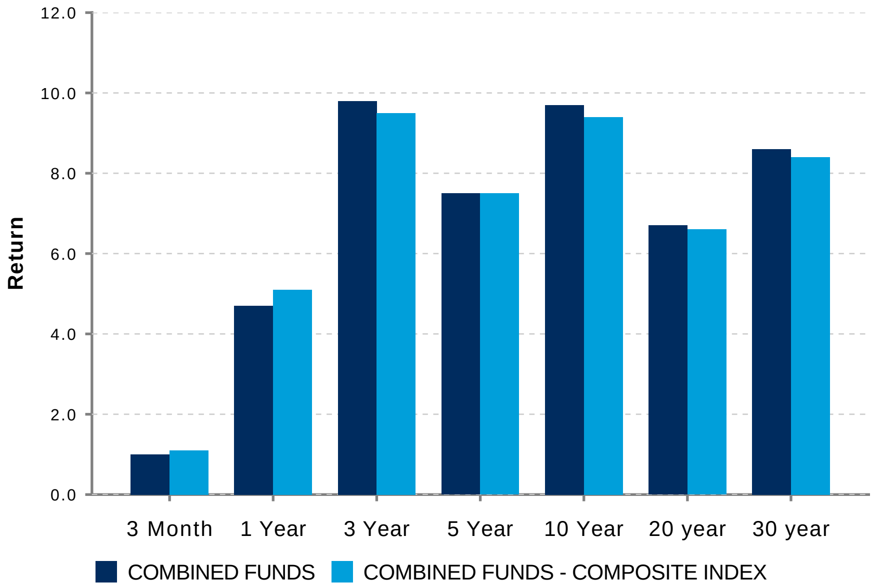
Asset Growth



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	1.0%	1.0%	4.7%	9.8%	7.5%	9.7%	6.7%	8.6%
COMBINED FUNDS - COMPOSITE INDEX	1.1	1.1	5.1	9.5	7.5	9.4	6.6	8.4
Excess	-0.1	-0.1	-0.4	0.2	0.0	0.3	0.2	0.2



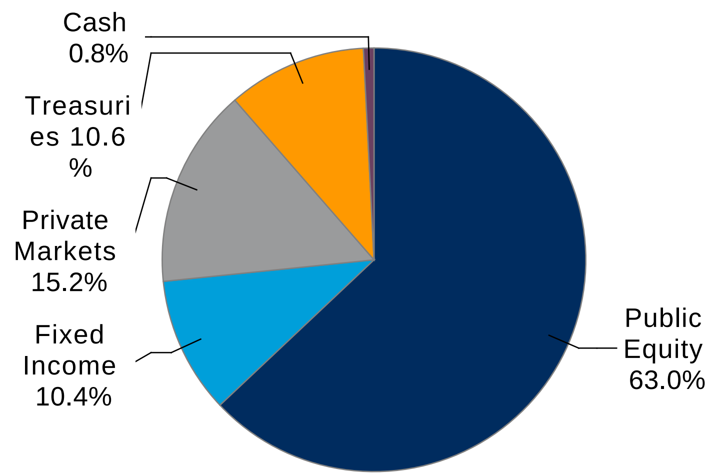
STATE STREET

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.

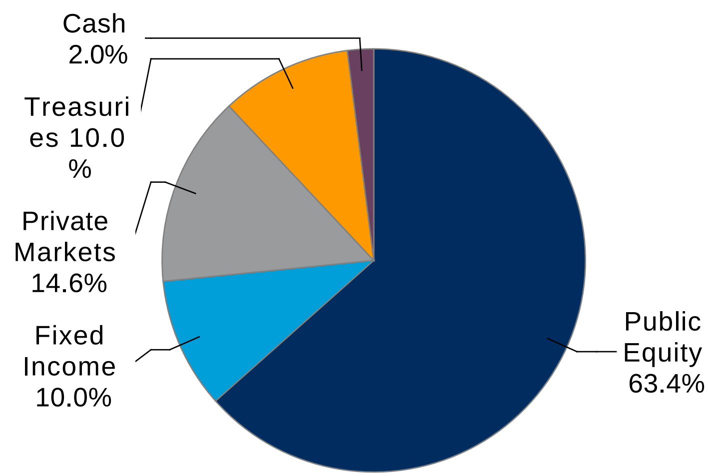
	(Millions)	Actual Mix	Policy Target
Public Equity	$44,485	62.9%	53.0%
Fixed Income	7,386	10.4	10.0
Private Markets	10,751	15.2	25.0
Treasuries	7,492	10.6	10.0
Cash	577	0.8	2.0
TOTAL	70,691	100.0	



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	63.5%	Public Equity Benchmark
Fixed Income	10.0	BB Barclays U.S. Aggregate
Private Markets	14.6	Private Markets
Treasuries	10.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills



STATE STREET

Combined Funds Asset Class Performance Summary

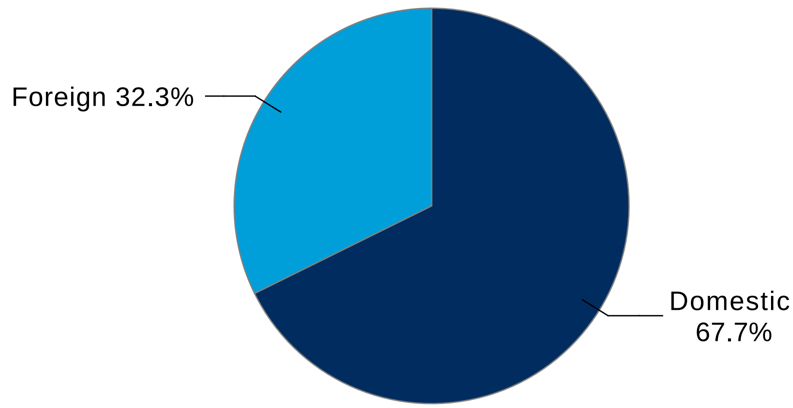
Public Equity

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 approximately 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 approximately 85% of the total market capitalization across 24 Emerging Markets countries.



	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Public Equity	0.0%	0.0%	1.1%	10.9%	8.3%	10.9%	5.9%	8.8%
Public Equity Benchmark	0.1	0.1	1.5	10.8				
Excess	-0.1	-0.1	-0.4	0.1				
Domestic Equity	0.8	0.8	2.1	12.8	10.1	13.0	6.4	9.3
Domestic Equity Benchmark	1.0	1.0	2.8	12.8	10.4	13.1	6.6	9.5
Excess	-0.3	-0.3	-0.7	0.1	-0.3	-0.1	-0.2	-0.2
International Equity	-1.5	-1.5	-0.9	6.4	3.4	5.0	4.6	
International Equity Benchmark	-1.8	-1.8	-1.2	6.4	2.9	4.5	4.2	
Excess	0.3	0.3	0.2	0.1	0.5	0.5	0.4	

Note:

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

Combined Funds Asset Class Performance Summary

Fixed Income

The Combined Funds Fixed Income 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	2.3%	2.3%	10.4%	3.5%	3.8%	4.6%	5.4%	6.4%
Fixed Income Benchmark	2.3	2.3	10.3	2.9	3.4	3.7	5.0	6.1
Excess	0.1	0.1	0.1	0.5	0.5	0.9	0.4	0.4
Treasuries	4.5	4.5	17.0					
BBG BARC 5Y + Us Tsy Idx	4.6	4.6	17.2					
Excess	-0.1	-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%	0.6%	2.4%	1.7%	1.1%	0.8%	2.2%	3.7%
90 DAY T-Bill	0.6	0.6	2.4	1.5	1.0	0.5	1.8	3.0

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	1.8%	1.8%	8.0%	13.7%	9.5%	12.6%	12.5%	13.7%	12.2%
Private Equity	3.5%	3.5%	12.8%	17.4%	14.3%	15.5%	13.3%	15.6%	
Private Credit	1.4	1.4	7.5	13.0	12.7	13.4	12.3		
Resources	-3.5	-3.5	-5.3	5.2	-4.8	5.9	14.9	14.4	
Real Estate	3.1	3.1	9.6	10.5	11.0	10.1	9.0	9.6	

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.

STATE STREET.

SBI Combined Funds Strategic Allocation Category Framework

	9/30/19 ($ millions)	9/30/19 Weights	Category Ranges	
Growth - Appreciation				
Public Equity	$ 44,485.34	62.9%		
Private Equity	$ 6,025.80	8.5%		
Non-Core Real Assets	$ 2,457.77	3.5%		
Distressed/Opportunistic	$ 1,083.27	1.5%		
	$ 54,052.19	**76.5%**	*50%*	*75%*
Growth - Income-oriented				
Core Fixed Income	$ 7,385.78	10.4%		
Private Credit	$ 620.61	0.9%		
Return-Seeking Fixed Income		0.0%		
	$ 8,006.38	**11.3%**	*15%*	*30%*
Real Assets				
Core Real Estate		0.0%		
Real Assets	$ 489.67	0.7%		
	$ 489.67	**0.7%**	*0%*	*10%*
Inflation Protection				
TIPS		0.0%		
Commodities		0.0%		
		0.0%	*0%*	*10%*
Protection				
U.S. Treasuries	$ 7,491.56	10.6%		
	$ 7,491.56	**10.6%**	*5%*	*20%*
Liquidity				
Cash	$ 651.04	0.9%		
	$ 651.04	**0.9%**	*0%*	*5%*
Opportunity				
Opportunity		**0.0%**	*0%*	*10%*
Total	**$ 70,690.84**	**100.0%**		
Illiquid Asset Exposure	**$ 10,677.12**	**15.1%**	*0%*	*30%*

Volatility Equivalent Benchmark

Comparison Periods Ending

As of (Date):	9/30/2019							
	1-year	*3-year*	*5-year*	*10-year*	*15-year*	*20-year*	*25-year*	*30-year*
SBI Combined Funds Return	**4.7%**	**9.8%**	**7.5%**	**9.7%**	**8.1%**	**6.7%**	**8.6%**	**8.6%**
Volatility Equivalent Benchmark Return	**5.1%**	**7.2%**	**5.6%**	**6.7%**	**6.2%**	**5.3%**	**6.7%**	**7.1%**
Value Added	**-0.4%**	**2.5%**	**1.9%**	**3.0%**	**1.9%**	**1.5%**	**1.9%**	**1.5%**
Standard Deviation: Benchmark = Combined Funds			**7.1%**	**7.9%**	**9.0%**	**9.3%**	**9.3%**	**9.2%**
Benchmark Stock Weight	**62%**	**62%**	**62%**	**60%**	**58%**	**61%**	**62%**	**62%**
Benchmark Bond Weight	**38%**	**38%**	**38%**	**40%**	**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

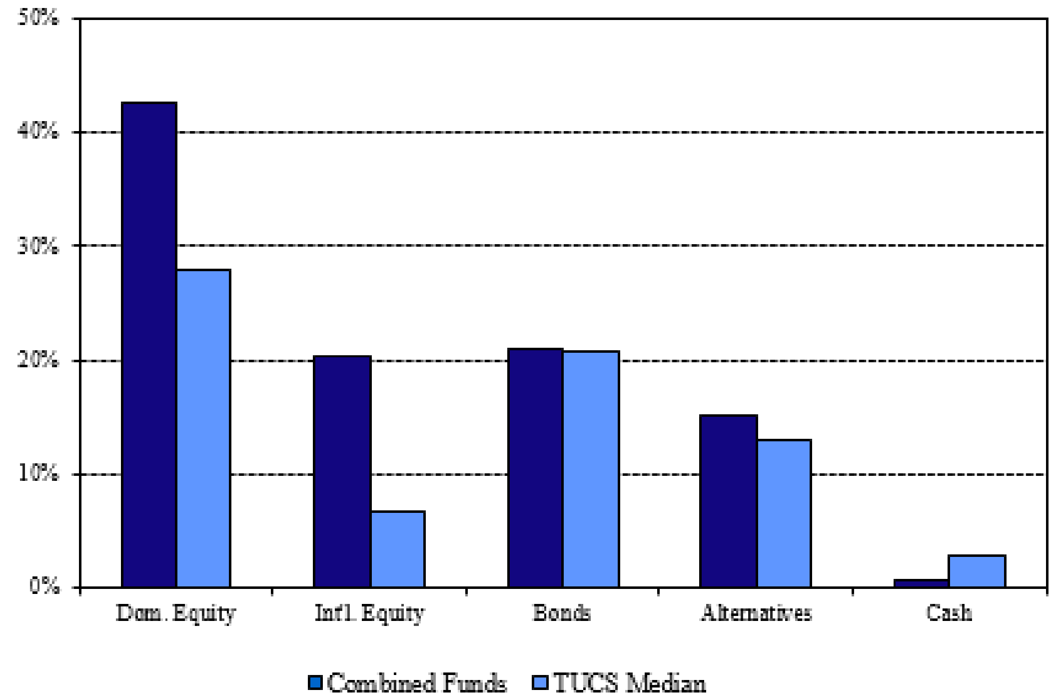
Asset Mix Compared to Other Pension Funds

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	44,485	62.9
Fixed Income	7,386	10.4
Treasuries	7,492	10.6
Private Markets	10,751	15.2
Cash	577	0.8
TOTAL	70,691	100.0



	Domestic Equity	International Equity	Bonds	Alternatives	Cash
Combined Funds	42.6%	20.4%	21.0%	15.2%	0.8%
Median in TUCS	28.0%	6.7%	20.7%	12.9%	2.8%

Combined Funds Summary

Performance Compared to Other Pension Funds

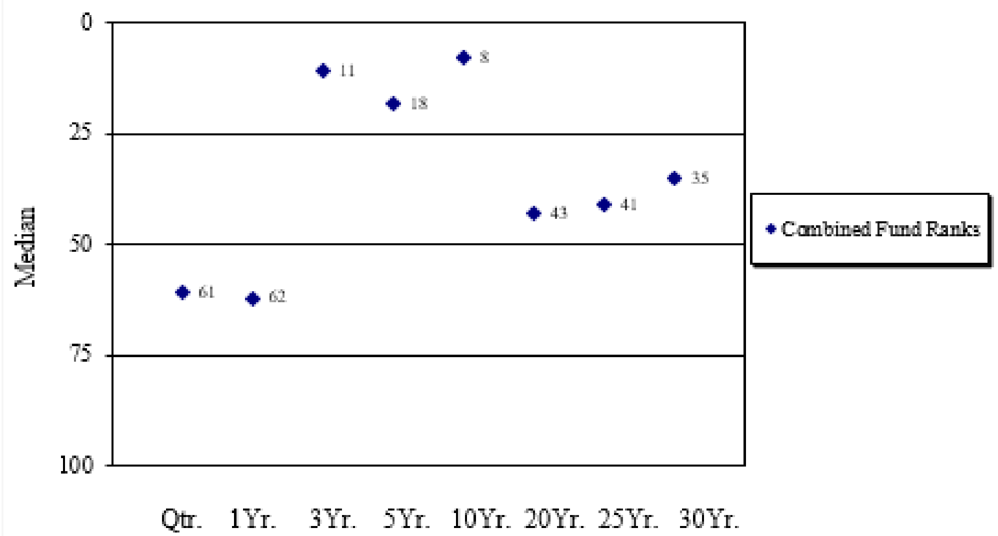
While the SBI is concerned with how its returns compare to other pension investors, universe comparisons should be used with great care. There are several reasons why such comparisons will provide an "apples to oranges" look at performance:

- 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 09/30/2019

	Qtr	1 Yr	3 Yrs	5 Yrs	10 Yrs	20 Yrs	25 Yrs	30 Yrs
Combined Funds Percentile Rank in TUCS	61st	62nd	11th	18th	8th	43rd	41st	35th

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: November 25, 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 September 30, 2019 is included as **Attachment A**.

A report on travel for the period from July 1, 2019 – September 30, 2019 is included as **Attachment B**.

2. FY19 Audit Report

The Legislative Auditor is working on the financial audit of SBI operations for FY19. We will inform you of the results upon completion of the audit.

3. Draft of the FY19 Annual Report

A draft of the SBI's annual report for FY19 will be distributed to the Board members/designees and IAC members upon completion of the FY19 audit. We would anticipate distribution in December or January.

4. Meeting Dates for Calendar 2020.

IAC	SBI
Tuesday, February 18, 2020	Wednesday, February 26, 2020 or Thursday, February 27, 2020*
Monday, May 18, 2020	Thursday, May 28, 2020
Monday, August 17, 2020	Wednesday, August 26, 2020
Monday, November 16, 2020	Wednesday, December 2, 2020 or Thursday, December 3, 2020*

*In the event of a conflict with the State Economic Forecast.

5. Sudan Update

Each quarter, staff provides a report to the Board on steps taken to implement *Minnesota Statutes*, section 11A.243 that requires SBI actions concerning companies with operations in Sudan. Staff receives periodic reports from the 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 third quarter, SBI managers sold 55,000 shares in one company on the divestment list.

On September 16, 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.

4. 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 third quarter, SBI managers sold 523,000 shares in two companies on the divestment list.

On September 16, 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.

5. Litigation Update

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

This page intentionally left blank.

ATTACHMENT A

STATE BOARD OF INVESTMENT
FISCAL YEAR 2020 ADMINISTRATIVE BUDGET REPORT
FISCAL YEAR TO DATE THROUGH SEPTEMBER 30, 2019

ITEM	FISCAL YEAR 2020 BUDGET	FISCAL YEAR 2020 9/30/2019
PERSONNEL SERVICES		
FULL TIME EMPLOYEES	$ 5,559,000	$ 1,192,442
PART TIME EMPLOYEES	0	0
MISCELLANEOUS PAYROLL	125,000	0
SUBTOTAL	**$ 5,684,000**	**$ 1,192,442**
STATE OPERATIONS		
RENTS & LEASES	285,000	93,508
REPAIRS/ALTERATIONS/MAINTENANCE	20,000	6,128
PRINTING & BINDING	12,000	775
PROFESSIONAL/TECHNICAL SERVICES	260,000	0
COMPUTER SYSTEMS SERVICES	120,000	69,133
COMMUNICATIONS	25,000	4,835
TRAVEL, IN-STATE	1,000	320
TRAVEL, OUT-STATE	125,000	19,880
SUPPLIES	30,000	15,232
EQUIPMENT	60,000	26,015
EMPLOYEE DEVELOPMENT	125,000	22,432
OTHER OPERATING COSTS	125,000	29,051
INDIRECT COSTS	300,000	72,295
SUBTOTAL	**$ 1,488,000**	**$ 359,604**
TOTAL ADMINISTRATIVE BUDGET	**$ 7,172,000**	**$ 1,552,045**

This page intentionally left blank.

ATTACHMENT B

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel July 1, 2019 - September 30, 2019

Purpose	Name	Destination / Date	Total Cost
Manager Search Defined Contribution Manager: J.P. Morgan **Manager Monitoring Minnesota College Savings (529) Plan Manager:** TIAA **Consultant Monitoring:** AON Hewitt Investment Consulting Inc.	P. Ammann	Chicago, IL 7/9/2019 - 7/10/2019	$ 778.31
Manager Monitoring Domestic Equity Manager: LSV **Manager Monitoring Fixed Income Manager:** Neuberger Berman **Consultant Monitoring:** AON Hewitt Investment Consulting Inc.	E. Sonderegger	Chicago, IL 7/9/2019 - 7/10/2019	768.43

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel July 1, 2019 - September 30, 2019

Purpose	Name	Destination / Date	Total Cost
Manager Monitoring **Domestic Equity Manager:** BlackRock **Manager Monitoring** **Domestic Equity/Fixed Income Manager:** Goldman Sachs **Manager Monitoring** **Domestic Equity/International Manager:** J.P. Morgan **Manager Monitoring** **International Equity Managers:** AQR; Pzena **Manager Monitoring** **Fixed Income Managers** Neuberger Berman; Prudential **Manager Monitoring** **Transition Manager:** Citigroup **Manager Search** **Domestic Equity Manager:** Bridgewater	T. Brusehaver	New York, NY Newark, NJ Greenwich, CT Westport, CT 7/22/2019 - 7/25/2019	$ 1,819.17

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel July 1, 2019 - September 30, 2019

Purpose	Name	Destination / Date	Total Cost
Manager Monitoring **Domestic Equity Manager:** BlackRock **Manager Monitoring** **Domestic Equity/Fixed Income Manager:** Goldman Sachs **Manager Monitoring** **Domestic Equity/International Manager:** J.P. Morgan **Manager Monitoring** **International Equity Managers:** AQR; Pzena **Manager Monitoring** **Fixed Income Managers** Neuberger Berman; Prudential **Manager Monitoring** **Transition Manager:** Citigroup **Manager Search** **Domestic Equity Manager:** Bridgewater	E. Sonderegger	New York, NY Newark, NJ Greenwich, CT Westport, CT 7/22/2019 - 7/25/2019	$ 1,848.25
Master Custodian Monitoring: State Street Corporation **Accounting Recordkeeper Monitoring:** Northeast Retirement Services	P. Ammann	Boston, MA Woburn, MA 8/4/2019 - 8/6/2019	627.06
Master Custodian Monitoring: State Street Corporation **Accounting Recordkeeper Monitoring:** Northeast Retirement Services	P. Anderson	Boston, MA Woburn, MA 8/4/2019 - 8/6/2019	615.00

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel July 1, 2019 - September 30, 2019

Purpose	Name	Destination / Date	Total Cost
Manager Monitoring **Equity Managers:** Sands Capital **Manager Monitoring** **International Manager:** Rock Creek **Other - Government Agencies:** Fannie Mae; Freddie Mac; World Bank Capital Markets	E. Sonderegger	Washington, D.C. McClean, VA Arlington, VA 8/6/2019 - 8/7/2019	$ 694.89
Manager Monitoring **Equity Managers:** Sands Capital **Manager Monitoring** **International Manager:** Rock Creek **Other - Government Agencies:** Fannie Mae; Freddie Mac; World Bank Capital Markets	A. Griga	Washington, D.C. McClean, VA Arlington, VA 8/6/2019 - 8/7/2019	886.22
Conference: Badger/Gopher Roundtable	A. Krech	Madison, WI 8/8/2019 - 8/9/2019	503.96
Manager Search **Private Markets Manager:** Vista Energy Partners **Consultant Monitoring:** AON Hewitt Investment Consulting Inc.	A. Krech	Chicago, IL 8/19/2019 - 8/20/2019	733.75
Manager Monitoring **Private Markets Managers:** Carlyle Group; NGP	A. Krech	Washington, D.C. 9/9/2019 - 9/11/2019	1,772.84

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel July 1, 2019 - September 30, 2019

Purpose	Name	Destination / Date	Total Cost
Conference: ABS East Conference sponsored by Information Management Network (IMN)	A. Griga	Miami, FL 9/22/2019 - 9/24/2019	$ 1,065.64
Manager Monitoring Private Markets Managers: Merit Capital; Prudential	C. Boll	Chicago, IL 9/25/2019 - 9/26/2019	976.63
Conference: National Association of State Investment Officers (NASIO)	M. Perry	Portland, ME 9/29/2019 - 10/2/2019	3,351.90

This page intentionally left blank.

TAB C

Report from the Executive Director

TUCS Comparison Observations

This page intentionally left blank.

EXECUTIVE DIRECTOR'S REPORT

DATE: November 25, 2019

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and Mansco Perry III

SUBJECT: TUCS Comparison Observations

The SBI Combined Funds have historically been compared, in the Wilshire Trust Universe Comparison Service (TUCS), to the Master Trust-Plans with assets under management of $1 billion or more. Given the size of the Combined Funds portfolio and the fact that the observations in the Master Trust include other institutional investors in addition to public funds, a more relevant comparison for the Combined Funds would be to other public funds of a comparable size.

We have had State Street provide comparisons for three groupings of Public Fund Plans as well as the Master Trust-Plan. Attached to this memo are the TUCS comparisons for Performance and Asset Allocation relative to the following comparison groups:

Master Trust-Plans greater than $1 billion
Public Plans greater than $10 billion
Public Plans greater than $20 billion
Public Plans greater than $50 billion

Given the size of the Combined Funds ($70 billion), it would appear that the most relevant comparison group would be that for plans greater than $50 billion. However, this grouping has a small number of comparison observations and the Combined Funds has a shorter history of being in this group.

Rather than make a decision regarding which group at this time is most appropriate, we will continue to present the performance and asset allocation comparisons for the current Master Plan group and the three public plan comparison groups. The information will be available for all to review. At some future date, we may make a recommendation, but for now we believe that presenting all the data may be most informative.

We should note that peer comparisons have generally been criticized because all plans have different asset allocation mixes. Different asset allocations will generate variations in return performance. While these comparisons will provide some information and may provide insight into the management of the Combined Funds, it is doubtful that any information gleaned from this data will be determinative of how the SBI performs or, more importantly, how the portfolio is constructed and managed.

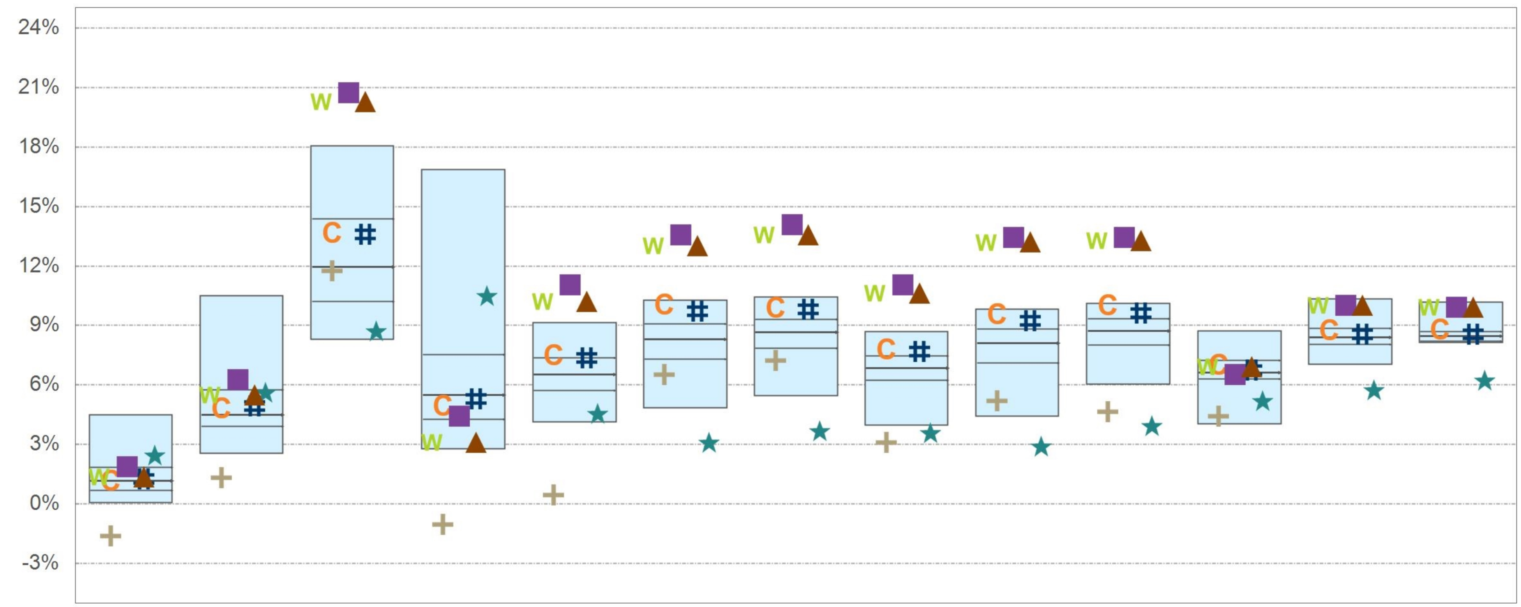
This page intentionally left blank.

Wilshire

Minnesota State Board of Investments
Performance Comparison

Total Returns of Master Trusts - Plans > $1 Billion

Cumulative Periods Ending : September 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years	20 Years	25 Years	30 Years
5th	4.48	10.50	18.07	16.87	9.15	10.26	10.42	8.68	9.83	10.10	8.73	10.35	10.17
25th	1.86	5.76	14.38	7.53	7.38	9.09	9.30	7.45	8.83	9.33	7.25	8.85	8.70
50th	1.17	4.49	11.94	5.49	6.52	8.30	8.67	6.85	8.11	8.73	6.61	8.41	8.47
75th	0.69	3.91	10.20	4.28	5.71	7.29	7.85	6.23	7.10	8.01	6.31	8.06	8.22
95th	0.07	2.56	8.29	2.78	4.15	4.86	5.47	3.98	4.42	6.06	4.03	7.06	8.13
No. Of Obs	135	133	133	133	132	131	131	128	127	116	92	67	30
C Combined Funds	1.00 (61)	4.65 (46)	13.50 (31)	4.78 (62)	7.32 (26)	9.88 (11)	9.73 (11)	7.63 (18)	9.41 (11)	9.85 (8)	6.86 (43)	8.60 (41)	8.62 (35)
# SBI Combined Funds Ind	1.07 (57)	4.74 (40)	13.41 (33)	5.12 (54)	7.19 (29)	9.54 (15)	9.64 (12)	7.49 (23)	9.06 (18)	9.42 (21)	6.56 (55)	8.37 (51)	8.37 (67)
W SBI Domestic Equity Ta	1.16 (51)	5.31 (32)	20.09 (4)	2.92 (92)	10.00 (2)	12.83 (1)	13.36 (1)	10.44 (1)	13.00 (1)	13.08 (1)	6.73 (45)	9.81 (7)	9.74 (9)
★ SBI Fixed Income Targe	2.27 (17)	5.42 (30)	8.52 (92)	10.30 (15)	4.38 (92)	2.92 (98)	3.49 (97)	3.38 (97)	2.72 (97)	3.75 (97)	5.01 (94)	5.57 (99)	6.03 (100)

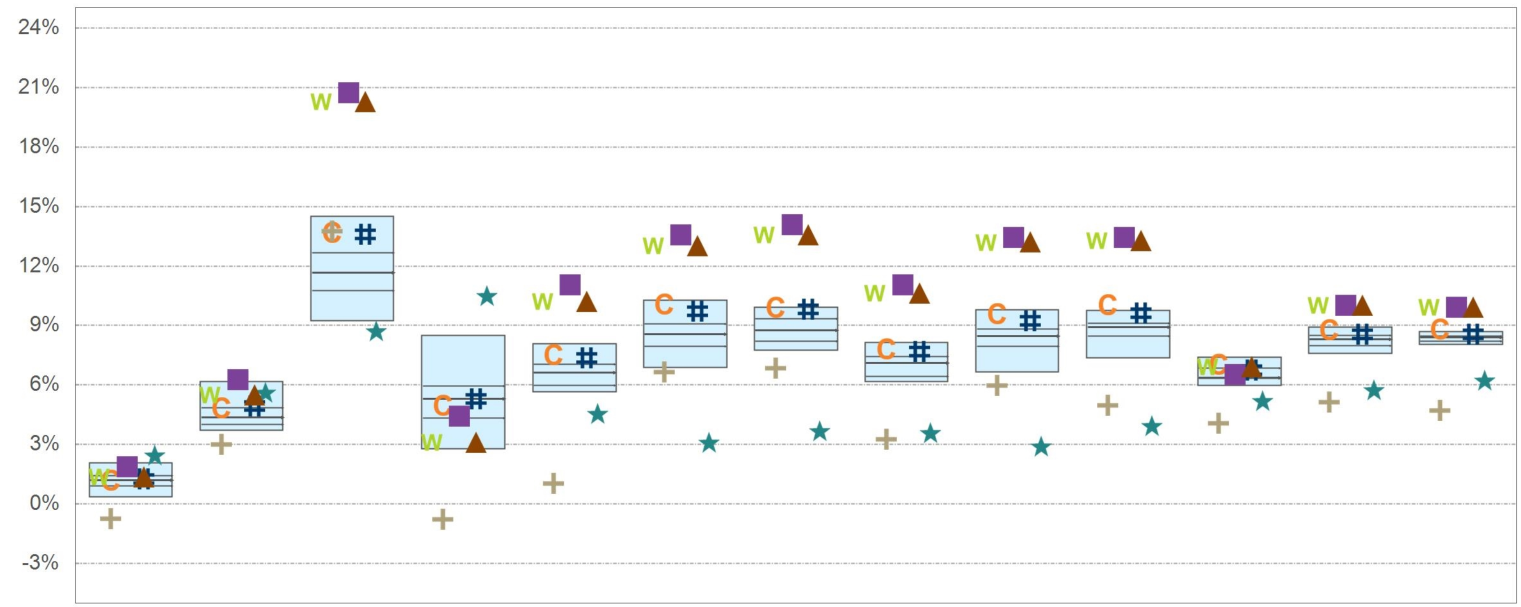
Wilshire Trust Universe Comparison Service® (TUCS®)

Wilshire

Minnesota State Board of Investments
Performance Comparison

Total Returns of Master Trusts - Public : Plans > $10 Billion

Cumulative Periods Ending : September 30, 2019

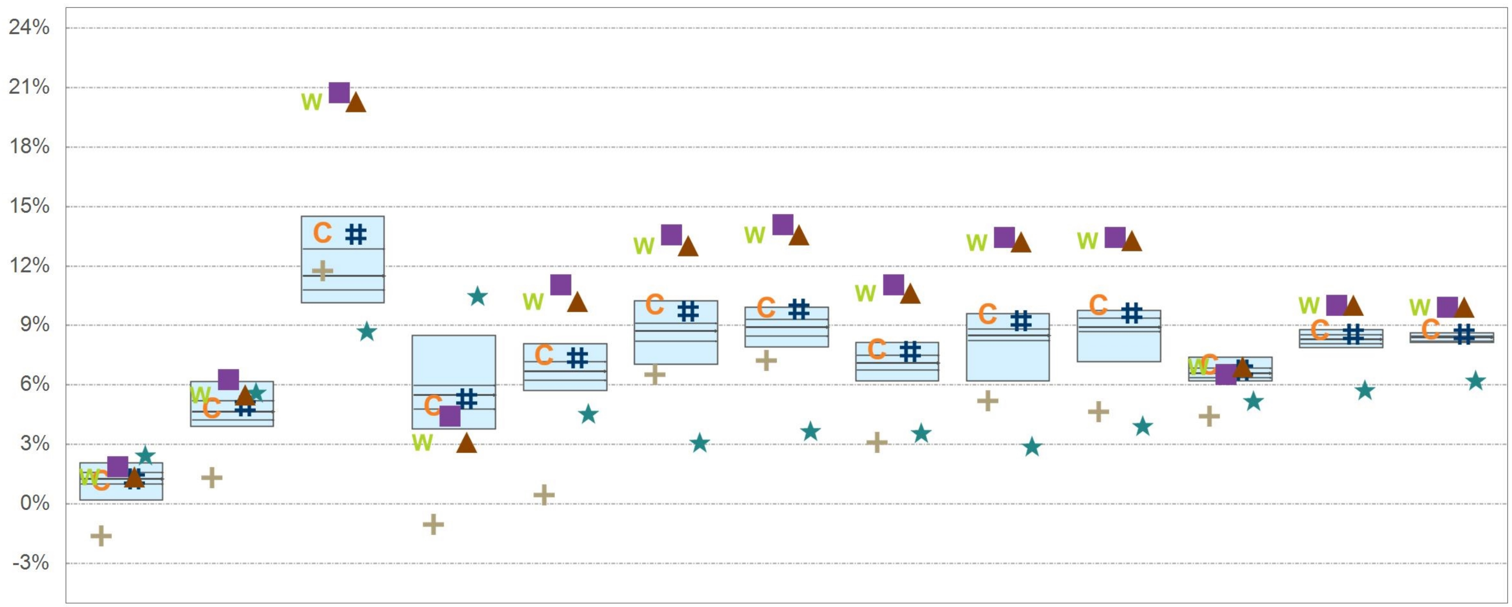


Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years	20 Years	25 Years	30 Years
5th	2.06	6.17	14.49	8.51	8.09	10.27	9.91	8.14	9.80	9.76	7.41	8.92	8.69
25th	1.44	4.85	12.66	5.95	7.03	9.09	9.35	7.42	8.83	9.12	6.86	8.49	8.48
50th	1.19	4.35	11.66	5.31	6.61	8.57	8.75	7.11	8.48	8.92	6.38	8.29	8.39
75th	0.91	4.02	10.76	4.34	5.98	7.94	8.20	6.44	7.96	8.46	6.32	7.99	8.20
95th	0.36	3.71	9.24	2.78	5.66	6.88	7.77	6.18	6.65	7.37	5.97	7.61	8.06
No. Of Obs	38	37	37	37	37	37	37	37	37	34	31	28	17
C Combined Funds	1.00 (69)	4.65 (41)	13.50 (13)	4.78 (63)	7.32 (20)	9.88 (13)	9.73 (8)	7.63 (13)	9.41 (13)	9.85 (1)	6.86 (28)	8.60 (17)	8.62 (12)
# SBI Combined Funds Ind	1.07 (63)	4.74 (30)	13.41 (13)	5.12 (52)	7.19 (22)	9.54 (15)	9.64 (8)	7.49 (20)	9.06 (15)	9.42 (19)	6.56 (43)	8.37 (32)	8.37 (50)
W SBI Domestic Equity Ta	1.16 (52)	5.31 (17)	20.09 (1)	2.92 (93)	10.00 (1)	12.83 (1)	13.36 (1)	10.44 (1)	13.00 (1)	13.08 (1)	6.73 (31)	9.81 (1)	9.74 (1)

Minnesota State Board of Investments
Performance Comparison

Total Returns of Master Trusts - Public : Plans > $20 Billion

Cumulative Periods Ending : September 30, 2019

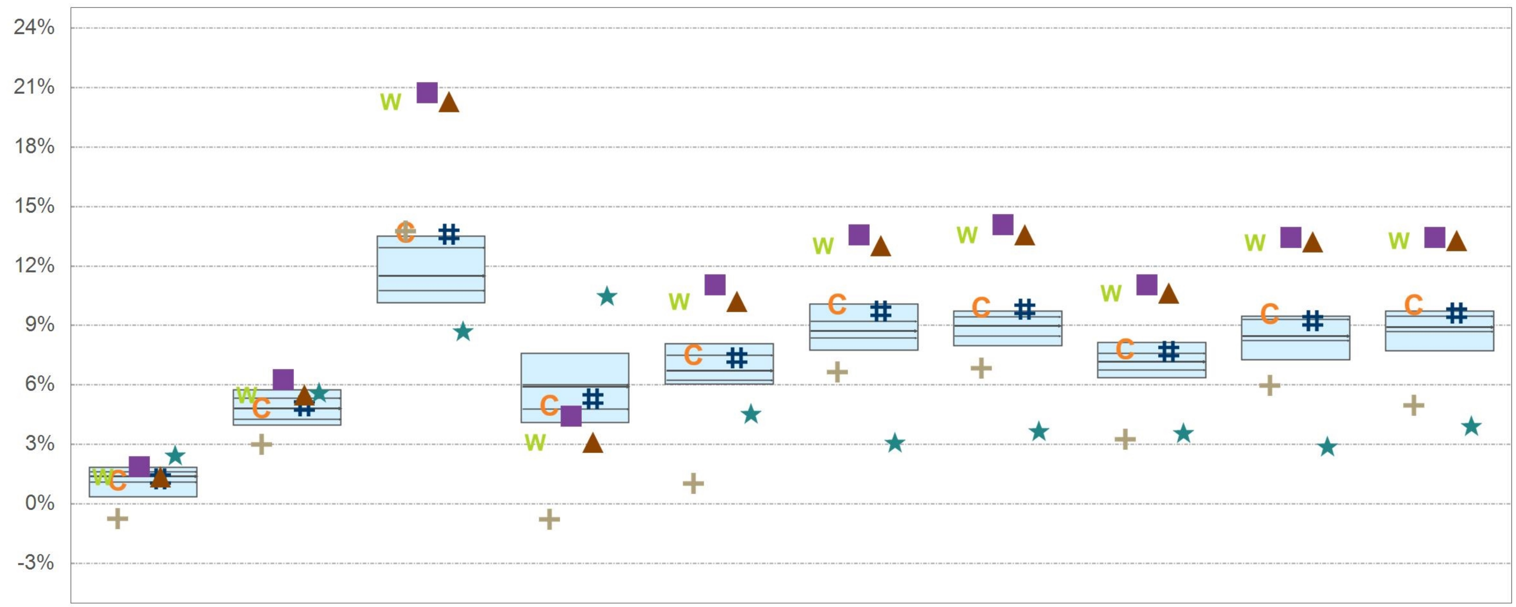


Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years	20 Years	25 Years	30 Years
5th	2.06	6.17	14.49	8.51	8.09	10.25	9.91	8.14	9.60	9.76	7.40	8.80	8.62
25th	1.58	5.19	12.86	5.99	7.19	9.12	9.30	7.51	8.83	9.37	6.86	8.54	8.48
50th	1.25	4.65	11.50	5.50	6.68	8.71	8.92	7.11	8.49	8.93	6.58	8.32	8.39
75th	1.00	4.24	10.79	4.78	6.24	8.22	8.45	6.76	8.24	8.70	6.37	8.08	8.20
95th	0.21	3.91	10.13	3.78	5.71	7.04	7.91	6.20	6.22	7.19	6.20	7.89	8.13
No. Of Obs	25	25	25	25	25	25	25	25	25	23	21	19	14
C Combined Funds	1.00 (75)	4.65 (50)	13.50 (13)	4.78 (75)	7.32 (21)	9.88 (13)	9.73 (9)	7.63 (13)	9.41 (13)	9.85 (1)	6.86 (30)	8.60 (18)	8.62 (5)
# SBI Combined Funds Ind	1.07 (70)	4.74 (37)	13.41 (13)	5.12 (58)	7.19 (25)	9.54 (13)	9.64 (9)	7.49 (25)	9.06 (17)	9.42 (20)	6.56 (50)	8.37 (35)	8.37 (50)
W SBI Domestic Equity Ta	1.16 (62)	5.31 (21)	20.09 (1)	2.92 (99)	10.00 (1)	12.83 (1)	13.36 (1)	10.44 (1)	13.00 (1)	13.08 (1)	6.73 (35)	9.81 (1)	9.74 (1)

Minnesota State Board of Investments
Performance Comparison

Total Returns of Master Trusts - Public : Plans > $50 Billion

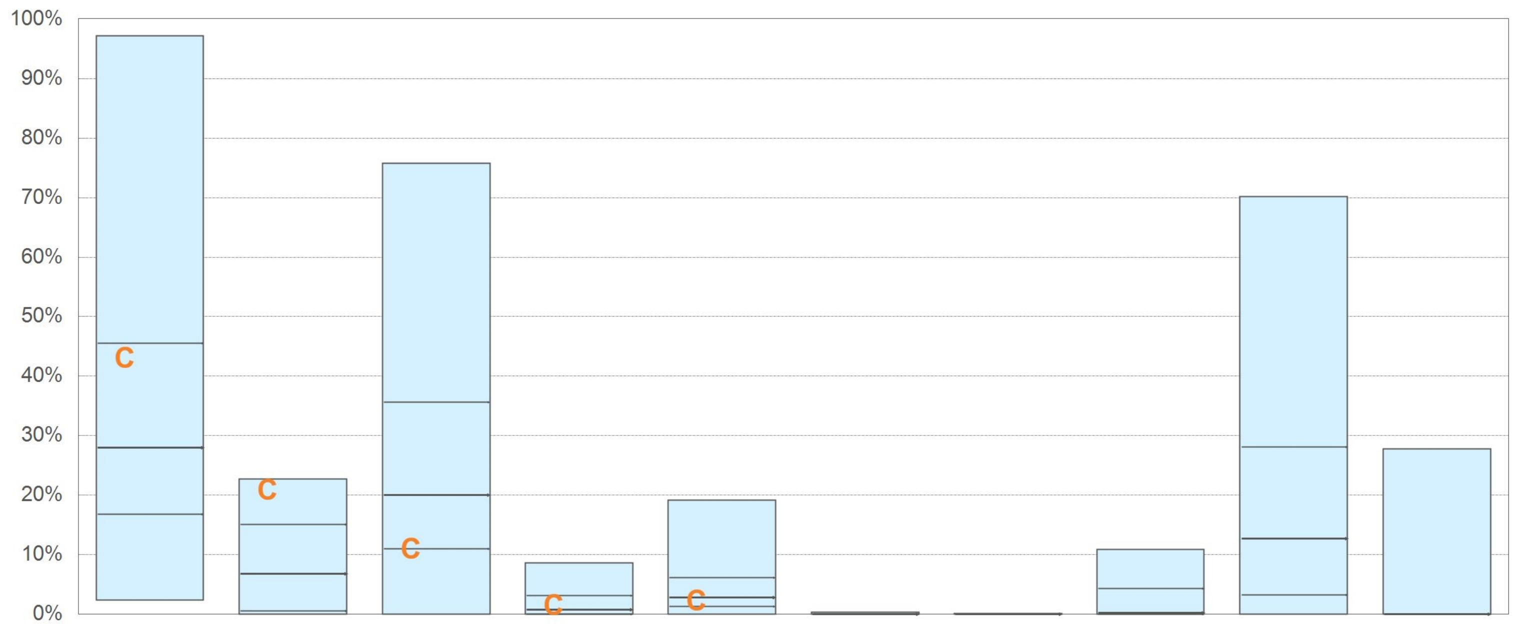
Cumulative Periods Ending : September 30, 2019



Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	1.86	5.76	13.50	7.58	8.09	10.09	9.73	8.14	9.46	9.73
25th	1.63	5.34	12.92	6.00	7.49	9.20	9.43	7.61	9.31	9.48
50th	1.39	4.81	11.50	5.90	6.72	8.74	8.97	7.18	8.48	8.92
75th	1.09	4.26	10.76	4.78	6.25	8.38	8.45	6.76	8.24	8.70
95th	0.36	3.98	10.13	4.10	6.06	7.75	7.97	6.36	7.27	7.72
No. Of Obs	16	16	16	16	16	16	16	16	16	15
C Combined Funds	1.00 (83)	4.65 (62)	13.50 (5)	4.78 (75)	7.32 (31)	9.88 (15)	9.73 (5)	7.63 (15)	9.41 (15)	9.85 (1)
# SBI Combined Funds Ind	1.07 (75)	4.74 (50)	13.41 (5)	5.12 (68)	7.19 (31)	9.54 (15)	9.64 (5)	7.49 (31)	9.06 (25)	9.42 (25)
W SBI Domestic Equity Ta	1.16 (68)	5.31 (25)	20.09 (1)	2.92 (100)	10.00 (1)	12.83 (1)	13.36 (1)	10.44 (1)	13.00 (1)	13.08 (1)
★ SBI Fixed Income Targe	2.27 (1)	5.42 (15)	8.52 (100)	10.30 (1)	4.38 (100)	2.92 (100)	3.49 (100)	3.38 (100)	2.72 (100)	3.75 (100)
■ S&P 500	1.70 (15)	6.08 (1)	20.55 (1)	4.25 (91)	10.87 (1)	13.39 (1)	13.90 (1)	10.84 (1)	13.26 (1)	13.24 (1)
+ MSCI Wld Ex US (Net)	-0.93 (100)	2.82 (100)	13.57 (1)	-0.95 (100)	0.84 (100)	6.48 (100)	6.65 (100)	3.06 (100)	5.77 (100)	4.78 (100)
▲ Russell 3000	1.16 (68)	5.31 (25)	20.09 (1)	2.92 (100)	10.00 (1)	12.83 (1)	13.36 (1)	10.44 (1)	13.01 (1)	13.08 (1)

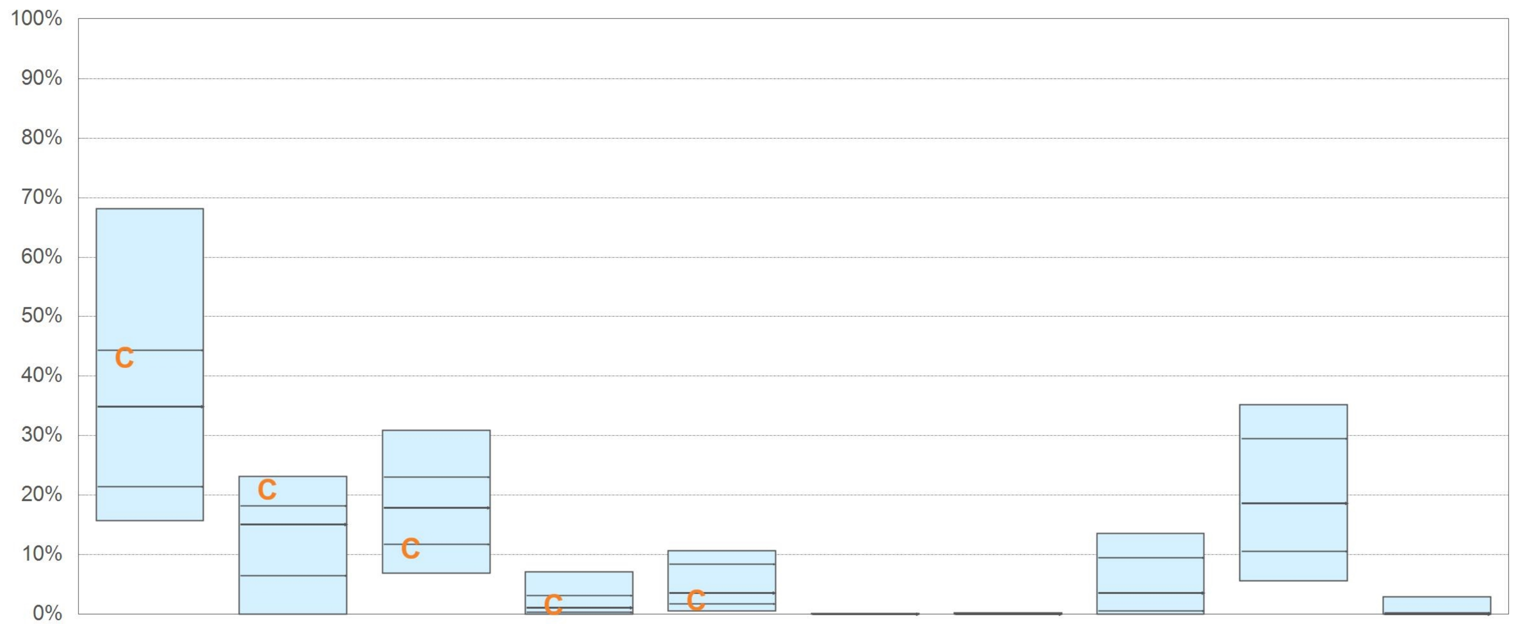
Minnesota State Board of Investments
Asset Allocation of Master Trusts - Plans > $1 Billion

Quarter Ending September 30, 2019



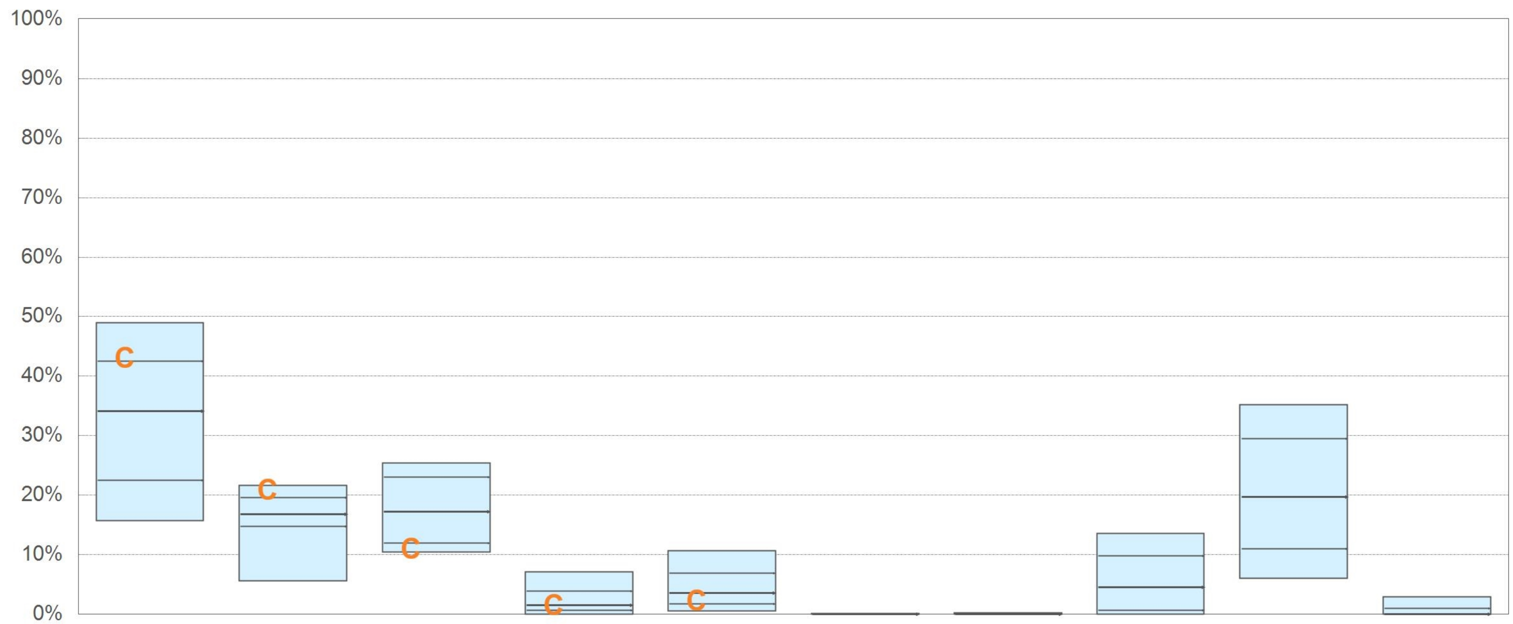
Percentile Rankings	US Equity	Non-US Equity	US Fixed	Non-US Fixed	Cash	Convertible	GIC GAC	Real Estate	Alternative Investments	Other
5th	97.25	22.70	75.83	8.58	19.16	0.28	0.12	10.90	70.21	27.81
25th	45.57	15.10	35.60	3.12	6.17	0.00	0.00	4.35	28.14	0.00
50th	27.97	6.73	19.98	0.70	2.84	0.00	0.00	0.21	12.73	0.00
75th	16.79	0.50	10.98	0.03	1.32	0.00	0.00	0.00	3.19	0.00
95th	2.37	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00
C Combined Funds	42.57 (29)	20.36 (8)	10.45 (75)	0.00 (100)	0.67 (87)			1.26 (36)	11.01 (54)	2.92 (15)

Minnesota State Board of Investments
Asset Allocation of Master Trusts - Public : Plans > $10 Billion
Quarter Ending September 30, 2019



Percentile Rankings	US Equity	Non-US Equity	US Fixed	Non-US Fixed	Cash	Convertible	GIC GAC	Real Estate	Alternative Investments	Other
5th	68.09	23.10	30.86	7.12	10.66	0.07	0.19	13.54	35.23	2.92
25th	44.33	18.18	23.02	3.12	8.37	0.02	0.00	9.52	29.50	0.21
50th	34.89	15.10	17.91	1.09	3.58	0.00	0.00	3.60	18.59	0.00
75th	21.45	6.45	11.76	0.30	1.67	0.00	0.00	0.52	10.54	0.00
95th	15.75	0.01	6.88	0.00	0.57	0.00	0.00	0.00	5.55	0.00
C Combined Funds	42.57 (32)	20.36 (15)	10.45 (87)	0.00 (100)	0.67 (83)			1.26 (62)	11.01 (71)	2.92 (5)

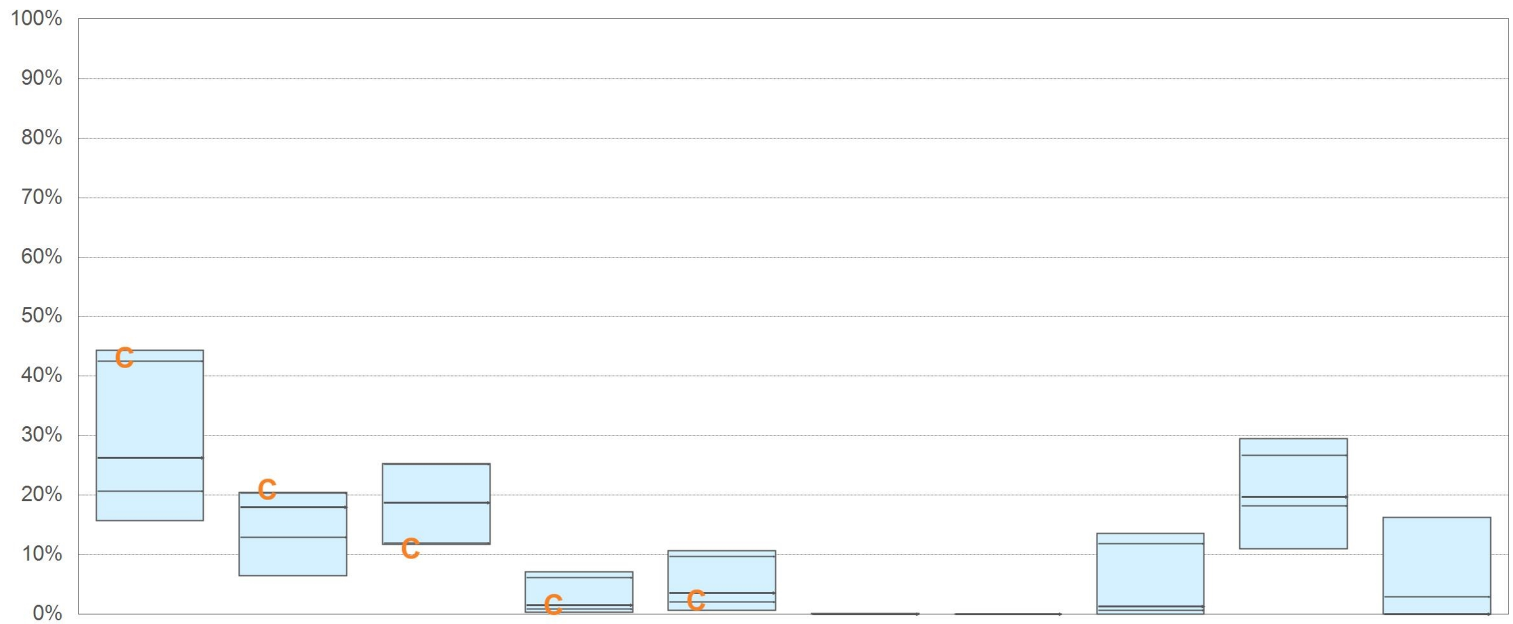
Minnesota State Board of Investments
Asset Allocation of Master Trusts - Public : Plans > $20 Billion
Quarter Ending September 30, 2019



Percentile Rankings	US Equity	Non-US Equity	US Fixed	Non-US Fixed	Cash	Convertible	GIC GAC	Real Estate	Alternative Investments	Other
5th	48.98	21.63	25.41	7.12	10.66	0.07	0.19	13.54	35.23	2.92
25th	42.57	19.63	23.02	3.88	6.89	0.01	0.00	9.75	29.50	1.00
50th	34.14	16.76	17.23	1.50	3.55	0.00	0.00	4.57	19.65	0.00
75th	22.46	14.78	11.98	0.67	1.67	0.00	0.00	0.66	11.01	0.00
95th	15.75	5.55	10.45	0.00	0.57	0.00	0.00	0.00	6.00	0.00
C Combined Funds	42.57 (25)	20.36 (18)	10.45 (99)	0.00 (100)	0.67 (87)			1.26 (62)	11.01 (75)	2.92 (5)

Wilshire

Minnesota State Board of Investments
Asset Allocation of Master Trusts - Public : Plans > $50 Billion
Quarter Ending September 30, 2019



Percentile Rankings	US Equity	Non-US Equity	US Fixed	Non-US Fixed	Cash	Convertible	GIC GAC	Real Estate	Alternative Investments	Other
5th	44.33	20.45	25.30	7.12	10.66	0.07	-	13.54	29.50	16.29
25th	42.57	20.36	25.17	6.09	9.74	0.01	-	11.86	26.72	2.92
50th	26.31	18.00	18.69	1.50	3.58	0.00	-	1.26	19.65	0.00
75th	20.65	12.96	11.98	0.83	2.08	0.00	-	0.66	18.20	0.00
95th	15.75	6.45	11.76	0.33	0.67	0.00	-	0.00	11.01	0.00
C Combined Funds	42.57 (25)	20.36 (25)	10.45 (100)	0.00 (100)	0.67 (99)			1.26 (50)	11.01 (99)	2.92 (25)

TAB D

Investment Advisory Council Report

Private Markets Program Report and Consideration of Commitments

This page intentionally left blank.

INVESTMENT ADVISORY COUNCIL REPORT

DATE: November 25, 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	Lexington Partners	CIP V Overage	$100 Million
Private Equity	Leonard Green & Partners	GEI VIII	$150 Million
Private Equity	Madison Dearborn Partners	MDP VIII	$100 Million
Distressed/Opp.	Marathon Asset Management	MDCF I	$200 Million
Real Estate	Rockwood	Fund XI	$100 Million

New Managers:

Private Credit	HPS Investment Partners	HPS Mezz 2019	$100 Million
Private Equity	Vista Equity Partners	Perennial Fund	$200 Million

SBI action is required on item B.

A. Status of SBI Current Private Markets Commitments

Minnesota State Board of Investment

Combined Funds
September 30, 2019

Combined Funds Market Value	$70,690,841,607
Amount Available for Investment	**$3,707,530,512**

	Current Level	Target Level	Difference
Market Value (MV)	$10,677,122,202	$17,672,710,402	$6,995,588,200
MV +Unfunded	$21,034,264,050	$24,741,794,562	$3,707,530,512

Asset Class	Market Value	Unfunded Commitment	Total
Private Equity	$6,025,801,282	$6,375,541,074	$12,401,342,356
Private Credit	$620,606,240	$893,279,534	$1,513,885,774
Real Assets	$2,061,068,343	$1,047,978,837	$3,109,047,180
Real Estate	$886,377,140	$1,253,729,087	$2,140,106,227
Distressed/Opportunistic	$1,083,269,197	$786,613,316	$1,869,882,513
Total	$10,677,122,202	$10,357,141,848	$21,034,264,050

Cash Flows
September 30, 2019

Calendar Year	Capital Calls	Distributions	Net Invested
2019 (9 months)	$1,729,723,128	($1,559,875,581)	$169,847,548
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, Lexington Partners ("Lexington"), in Lexington Co-Investment Partners V Overage Program ("Overage Program").**

   Lexington is forming the Overage Program to invest alongside CIP V in equity co-investment transactions that exceed prudent diversification levels for CIP V. The CIP V and Overage Program investments will be with leading buyout and growth sponsors primarily in U.S. and European companies with some selective investments in Asian and Latin American companies as well. While the Overage Program will only invest in CIP V deals, the ultimate portfolio construction will differ. The Overage Program will still be diversified across sponsor, company, company size, geography, industry, and vintage, but it is expected to have a greater exposure to mid and large size companies when compared to CIP V.

   In addition to reviewing the attractiveness of the Overage Program 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 Overage Program 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 $100 million, or 20% of Lexington Co-Investment Partners V Overage Program, 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 Lexington Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Lexington Partners or reduction or termination of the commitment.

2) **Investment with an existing private equity manager, Leonard Green & Partners ("LGP"), in Green Equity Investors VIII, L.P. ("GEI VIII").**

   LGP is seeking investors to continue their lengthy history of making investments in market-leading companies with attractive growth prospects across a broad range of industries, with a preference for companies providing services, including consumer, business, and healthcare services, as well as retail, distribution and industrials. LGP seeks to invest in companies with (i) market-leading franchises and defensible competitive positions, (ii) attractive growth prospects, and (iii) proven management teams. GEI VIII will primarily target companies based in the United States.

In addition to reviewing the attractiveness of the GEI 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 GEI VIII 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 $150 million, or 20% of GEI 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 Leonard Green & 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 Leonard Green & Partners or reduction or termination of the commitment.

3) Investment with an existing private equity manager, Madison Dearborn Partners ("MDP") in Madison Dearborn Capital Partners VIII ("Fund VIII").

Madison Dearborn Partners is establishing Fund VIII to make buyout and growth equity investments in established middle and upper middle-market companies located primarily in the United States. MDP is organized in the five industry verticals where it transacts: Basic Industries; Business & Government Software and Services; Financial & Transaction Services; Health Care; and Telecom, Media & Technology Services. MDP believes that its reputation and extensive experience in each of these sectors provide a significant competitive advantage with respect to: (i) sourcing; (ii) early assessment of investment opportunities; (iii) due diligence; and (iv) creating value in portfolio companies post close.

In addition to reviewing the attractiveness of the Madison Dearborn Capital Partners 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 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 Madison Dearborn 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 Madison Dearborn 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 Madison Dearborn Partners or reduction or termination of the commitment.

4) **Investment with an existing private credit manager, Marathon Asset Management ("Marathon"), in Marathon Distressed Credit Fund, L.P. ("MDCF I").**

Marathon is establishing MDCF I to construct a portfolio of distressed, dislocated, and restructuring corporate credit opportunities in complex situations with attractive risk-adjusted return characteristics. Core holdings of the Fund will include bankruptcy reorganizations, liquidations, rescue lending, distressed exchanges, debtor-in-possession financings, and dislocated credit. Marathon may invest up to 30% of its aggregate capital commitments prior to the occurrence of an Investment Trigger (three predefined scenarios related to the High Yield bond market), but may not invest in excess of 30% of capital commitments, in each case measured at the time of investment, until an Investment Trigger has occurred

In addition to reviewing the attractiveness of the MDCF I 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 MDCF I 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 $200 million, or 20% of Marathon Distressed Credit Fund, 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 Marathon 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 Marathon or reduction or termination of the commitment.

5) **Investment with an existing real estate manager, Rockwood Capital, LLC ("Rockwood"), in Rockwood Capital Real Estate Partners Fund XI, L.P. ("Fund XI").**

Rockwood is forming Fund XI to make value add investments in commercial real estate. Fund XI will continue Rockwood's history of targeting office and other workspace, multifamily, and hotel assets in major U.S. metropolitan areas. Rockwood believes that there is significant opportunity for the Fund to create value by transforming under-improved properties with certain positive attributes into valuable properties that will attract multiple buyers when Rockwood decides to sell. Fund XI will look to acquire well-located assets with upside potential that can be realized through renovation, re-tenanting, redevelopment, development and/or improvement in property management and operations.

In addition to reviewing the attractiveness of the Fund XI 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 XI 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 $100 million, or 20% of Rockwood Capital Real Estate Partners Fund XI, 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 Rockwood 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 Rockwood or reduction or termination of the commitment.

6) **Investment with a new private credit manager, HPS Investment Partners, LLC ("HPS"), in HPS Mezzanine Partners 2019, L.P. ("HPS 2019").**

HPS is establishing HPS 2019 to generate current returns and long-term appreciation through investments in mezzanine securities, which are high-yielding fixed and floating rate debt and debt-like instruments. HPS believes mezzanine investments offer investors the combination of a high contractual coupon and current income, with significant downside protection through highly negotiated agreements with customized covenants. HPS generally intends to pursue investments where the members of the Mezzanine Team possess a deep knowledge of the sector and the company, generally focusing on companies that demonstrate, or are expected to develop: (i) sustainable advantages and meaningful barriers to entry, (ii) strong market share, (iii) substantial EBITDA margins and free cash flow and (iv) proven, experienced management teams.

In addition to reviewing the attractiveness of the HPS 2019 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 HPS 2019 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 $100 million, or 20% of HPS Mezzanine Partners 2019, 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 HPS 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 HPS Investment Partners or reduction or termination of the commitment.

7) **Investment with a new private equity manager, Vista Equity Partners Management, LLC ("Vista"), in Vista Equity Partners Perennial, L.P. ("Perennial Fund").**

Vista is establishing the Perennial Fund to create platforms with controlling interests in operationally mature, middle market, upper middle market and large cap enterprise software, data and technology-enabled solutions companies. Vista's value creation in Perennial will come from the Firm's ability to identify and acquire the optimal companies, effecting combinations of these companies into platforms via full or partial Mergers and Acquisitions, and enhancing product development and processes. Vista expects to hold investments in the Perennial Fund for a longer duration than typical private equity investments.

In addition to reviewing the attractiveness of the Perennial 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 Perennial Fund 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 $200 million, or 20% of Vista Equity Partners Perennial, 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 Vista 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 Vista or reduction or termination of the commitment.

ATTACHMENT A

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. *Background Data*

Name of Fund:	Lexington CIP V Overage Program
Type of Fund:	Private Equity – Co-Investment
Target Fund Size:	$500 million
Fund Manager:	Lexington Partners
Manager Contact:	Bart Osman Lexington Partners 660 Madison Avenue New York, NY 10065

II. *Organization and Staff*

Lexington Partners L.P. (the "Firm" or "Lexington") is forming Lexington Co-Investment Partners V, L.P. (the "Partnership" or "CIP V") and the Lexington CIP V Overage Program ("Overage Program"), to continue Lexington's history of successfully making equity co-investments in transactions alongside leading buyout and growth sponsors in U.S. and European companies. The Partnership and Program are being formed to continue Lexington's successful, 21-year co-investment strategy and will selectively add new limited partners to the Firm's established global co-investment program. The Overage Program is a vehicle that will invest alongside CIP V in deals that exceed prudent diversification levels for CIP V.

Lexington is the largest independent manager of co-investment and secondary acquisition funds with more than $48 billion in original committed capital. Lexington's funds pursue innovative strategies in two principal areas: (i) making equity co-investments alongside leading buyout and growth capital sponsors, and (ii) providing secondary liquidity solutions to owners of private equity and alternative investments. In addition, since 1998, Lexington's secondary funds have made select commitments to new private equity funds during their initial formation to complement Lexington's secondary acquisition strategy. Lexington has been at the forefront of private equity innovation since principals of Lexington helped pioneer the development of the secondary market for private equity interests 27 years ago and also created one of the first independent co-investment programs 21 years ago.

Lexington's co-investment strategy is led by Partners Bart Osman, John Loverro, David Outcalt, and James Pitt. The CIP team is located in New York City and London, complemented by Lexington offices in Menlo Park, Boston, Hong Kong, and Santiago.

III. *Investment Strategy*

Increasingly, limited partners are seeking co-investment opportunities to enhance their private equity programs. Co-investments offer limited partners the ability to obtain insights and gain additional exposure to attractive private equity investments, while benefiting from significantly lower economic costs including lower fees and carried interest as compared to traditional primary fund investing. The co-investment program ("CIP") will seek to generate superior returns by co-investing alongside high-quality buyout sponsors in attractive companies primarily in the United States and Europe. CIP V and the Overage Program will also co-invest opportunistically in companies in the growth markets of Asia and Latin America.

Lexington's co-investment program ("CIP") was created in 1998 specifically to allow the Florida State Board of Administration ("FSBA"), the fifth largest U.S. public pension fund, to harness the co-investment opportunities generated by the FSBA's and Lexington's combined private equity programs. Additional limited partners joined the program over the years to capitalize on the growth in co-investment opportunities from their respective large private equity fund portfolios. CIP's dedicated co-investment team thoroughly analyzes transactions and has the discretion and flexible investment process to respond to opportunities in a timely manner. Lexington's distinctive partnership model enables investors to aggregate their private equity commitments to provide increased access to deals that may not be available on an individual investor basis. Currently, the program's limited partners are six U.S. state plans and five non-U.S. investors located in Australia, Europe, and Latin America.

Lexington has been a consistent co-investor in private equity transactions since 1998, sourcing and analyzing over 2,200 co-investment opportunities from more than 450 private equity sponsors, and committing to invest $5.4 billion in 337 companies alongside 158 sponsors. Over the past 21 years, co-investment volume has increased considerably and is now estimated by published sources to account for more than 5% of global private equity volume. Lexington expects that co-investment volume will continue to increase due to the significant benefits for both limited partners and private equity sponsors.

CIP seeks to make passive, minority co-investments alongside lead transaction sponsors. As a result, CIP does not have the same degree of day-to-day portfolio company management responsibilities as the control sponsor. This allows CIP to assemble a more diversified portfolio of investments than traditional primary funds which, the General Partner believes, reduces portfolio risk. As in prior CIP funds, CIP V and the Overage Program will seek to assemble a diversified portfolio of co-investments including by sponsor, company, company size, geography, industry, and vintage, and therefore anticipates achieving broad industry exposure.

The Overage Program will invest alongside CIP V in deals that exceed prudent diversification levels for CIP V. While the Overage Program will only invest in CIP V deals, the ultimate portfolio construction will differ. The Overage Program will still be diversified across sponsor, company, company size, geography, industry, and vintage, but it is expected to have a greater exposure to mid and large size companies when compared to CIP V.

IV. *Investment Performance*

Previous fund performance as of June 30, 2019 is shown below. Historical CIP performance is provided here:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
CIP I	1998	$903 million	-	13.4%	1.8	1.8
CIP II	2005	$950 million	-	4.9%	1.4	1.2
CIP III	2012	$1.6 billion	-	19.6%	1.8	1.1
CIP IV	2016	$2.4 billion	$200 million	20.7%	1.2	0.1

Historical performance for Lexington's global secondary funds is provided here:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
LCP I	1996	$242 million	-	13.1%	1.3	1.3
LCP II	1998	$1.1 billion	-	8.2%	1.3	1.3
LCP III	1999	$656 million	-	8.7%	1.3	1.3
LCP IV	2000	$606 million	-	19.3%	1.8	1.8
LCP V	2002	$2.0 billion	-	18.9%	1.7	1.7
LCP VI	2006	$3.8 billion	$100 million	6.9%	1.4	1.3
LCP VII	2010	$7.1 billion	$200 million	15.1%	1.6	1.3
LCP VIII	2014	$10.1 billion	$150 million	19.6%	1.3	0.4
LCP IX	2018	$12.0 billion	$150 million	N/A	N/A	N/A

Historical performance for Lexington's middle market secondary funds is provided here:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
LMMI I	2005	$556 million	-	11.6%	1.6	1.5
LMMI II	2009	$650 million	-	14.7%	1.7	1.3
LMMI III	2013	$1.1 billion	-	18.4%	1.5	0.7
LMMI IV	2017	$2.7 billion	$100 million	NM	1.1	0.1

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

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.

ATTACHMENT B

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Green Equity Investors VIII, L.P.
Type of Fund:	Private Equity
Total Fund Size:	$10 billion
Fund Manager:	Leonard Green & Partners, L.P.
Manager Contact:	Erika Spitzer 11111 Santa Monica Blvd. #2000 Los Angeles, CA 90025

II. Organization and Staff

Leonard Green & Partners, L.P. ("LGP" or the "Firm") is forming Green Equity Investors VIII, L.P. ("GEI VIII" or the "Fund") to make investments in market-leading companies with attractive growth prospects across a broad range of industries, with a preference for companies providing services, including consumer, business, and healthcare services, as well as retail, distribution and industrials. GEI VIII will primarily target companies based in the United States.

Based in Los Angeles, California, Leonard Green & Partners was founded in 1989 and has raised seven successive funds that have pursued an investment strategy consistent with GEI VIII.

The investment activities of the Firm are led by John G. Danhakl, Jonathan D. Sokoloff and twelve other Investment Partners. The Investment Partners have successfully executed, managed, and exited leveraged investments through numerous economic and financial cycles. The Investment Partners, who have an average tenure of 15 years at LGP, form a cohesive and stable team of private equity professionals, with Messrs. Danhakl and Sokoloff (the "Managing Partners") having worked together in various capacities for over 30 years. Overall LGP's investment staff is made up of 39 investment professionals, supported by 18 additional non-investment staff.

III. Investment Strategy

In GEI VIII, the Firm will continue to pursue the same core philosophy, strategy, and process it has employed successfully since its inception. LGP's investment philosophy begins with a commitment to achieve strong investment performance in any economic environment with a focus on minimizing risk. Specifically, LGP seeks to invest in companies with (i) market-leading franchises and defensible competitive positions, (ii) attractive growth prospects, and (iii) proven management teams. This strategy encompasses not only pursuing investments that meet this investment criteria, but also proactive sourcing of investment opportunities, rigorous due diligence, creative structuring, active involvement in value creation post-acquisition, and timely realizations.

Target Market-Leading Companies

The Fund will target investments in companies with market-leading franchises, defensible competitive positions, and successful track records. These investments are expected to be made across a broad range of industries, with a general preference for companies providing services, including consumer, business, and healthcare services, as well as retail, distribution and industrials. In GEI VIII, the Firm will remain flexible, but will primarily target equity investments ranging in size from $400 million to $1 billion per transaction.

Growth Investing

A core element of LGP's strategy is investing in companies the Firm believes have attractive growth prospects. To execute this strategy, the Firm spends considerable time understanding, analyzing and evaluating the drivers of historical and projected growth for potential investments as well as identifying risks to future growth. LGP's diligence process often includes analyzing the unit-level economics of multi-location business, as applicable, across industries. In addition to organic growth, LGP evaluates the ability of companies to identify, consummate and integrate acquisitions. LGP has a proven track record of assisting portfolio companies in making acquisitions that create significant shareholder value. As a result, the Firm has historically generated the majority of its returns from EBITDA growth.

Invest with Proven Management Teams

LGP believes that the quality of a management team can have a material impact on the outcome of an investment. As a result, the Partners spend considerable time evaluating the ability and depth of a management team by analyzing, among other items: (i) the track record of effectively and consistently delivering growth, (ii) historical performance compared to budget and compared to the performance of competitors, (iii) the ability to adapt strategy, cost structure, and the business plan in the face of changing market conditions, and (iv) the value created by acquisitions. LGP believes that alignment of interests with management is critical. Investments are structured to ensure that management teams are compensated largely based on company performance and have significant personal equity invested alongside the Firm.

Proactive Deal Sourcing

For 30 years, LGP has conducted a proactive and focused outbound calling effort. With disciplined persistence, LGP's senior investment team works to connect the owners and/or the senior management of leading companies in industries that have attractive investment characteristics. In particular, LGP seeks to capitalize on the Firm's market presence in certain targeted industries to identify, contact, and develop relationships with other significant industry participants, often over a period of years, before making an investment.

Value Added Post Acquisition

Post-acquisition, the Firm works in partnership with portfolio company managers to achieve growth objectives and optimize operating performance. Typically, at least two LGP representatives serve on the board of directors of each portfolio company. LGP is particularly involved in prioritizing and approving growth initiatives and evaluating add-on acquisition opportunities. LGP also seeks to coordinate the sharing of best practices and the procurement of indirect expense items across its portfolio through the efforts of the LGP Portfolio Services team, which consists of three full-time LGP professionals. This collective effort results in collaboration across many functions, including marketing, information technology, privacy/security, human resources, and supply chain. Equally important are the measurable cost savings in logistics, insurance, travel, facilities, and other categories. The LGP approach to adding value at portfolio companies is very appealing to strong leaders of great businesses, which contributes to the Firm being a partner of choice.

IV. *Investment Performance*

Previous fund performance as of June 30, 2019 for the Green Equity Investors funds and the SBI's investments with previous funds, where applicable, is shown below:

Fund	Inception Date	Total Equity Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Green Equity Investors I	1990	$216 million	-	34.8%	4.3	4.3
Green Equity Investors II	1995	$311 million	-	14.8%	2.1	2.1
Green Equity Investors III	1999	$1.2 billion	-	21.8%	2.4	2.4
Green Equity Investors IV	2004	$1.8 billion	-	11.2%	2.0	2.0
Green Equity Investors V	2007	$5.3 billion	-	18.7%	2.3	1.8
Green Equity Investors VI	2012	$6.3 billion	$200 million	16.4%	1.7	0.7
Green Equity Investors VII	2017	$9.6 billion	-	8.8%	1.2	0.0

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net IRR and Multiple of Invested Capital (MOIC) were provided by LGP.

V. Investment Period and Term

The investment period is six years from the initial Management Fee drawdown. The term is ten years from the date of the initial Management Fee drawdown, subject to a one-year extension at the General Partner's discretion and two further one-year extensions with the consent 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 C

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Madison Dearborn Capital Partners VIII-A, L.P.
Type of Fund:	Private Equity – Buyout
Target Fund Size:	$4.5 billion
Fund Manager:	Madison Dearborn Partners VIII-A, L.P.
Manager Contact:	David Pequet 70 West Madison Street Chicago, Illinois 60602

II. Organization and Staff

Madison Dearborn Partners ("Madison Dearborn", "MDP", or the "Firm") is forming Madison Dearborn Capital Partners VIII (the "Fund" and, together with its parallel funds, "Fund VIII") to make buyout and growth equity investments in established middle and upper middle-market companies located primarily in the United States.

MDP was founded in 1992 and operates out of a single office in Chicago. The firm has a total of 43 investment professionals led by 20 managing directors with John Canning Jr. serving as Chairman, and Paul Finnegan and Samuel Mencoff as co-CEOs. The average tenure of the 20 managing directors at MDP and the predecessor firm, First Chicago Venture Capital, is 17 years. Since MDP's formation in 1992, the firm has invested $19.7 billion in 144 companies across seven prior investment funds.

III. Investment Strategy

Madison Dearborn seeks to invest in companies that are well-positioned to achieve substantial growth and value appreciation through carefully defined value creation initiatives. MDP will typically make equity and equity-related investments ranging from $100 million to $400 million in businesses with enterprise values ranging from $100 million to $2.5 billion. The Firm is organized in the five industry verticals where it transacts: Basic Industries; Business & Government Software and Services; Financial & Transaction Services; Health Care; and Telecom, Media & Technology Services ("TMT Services"). MDP believes that its reputation and extensive experience in each of these sectors provide a significant competitive advantage with respect to: (i) sourcing; (ii) early assessment of investment opportunities; (iii) due diligence; and (iv) creating value in portfolio companies post close.

MDP focuses on the middle and upper-middle market because the Principals believe it allows MDP to fully leverage its unique sourcing angles to generate deal flow away from the competitive mainstream. This segment of the market is also one where the Firm believes it can effectively implement change in companies during its ownership. Furthermore, companies in this size range often have multiple exit alternatives, including having the scale and relevance attractive to corporate buyers and the public markets, while also retaining the flexibility to sell to financial investors.

As with prior funds, Fund VIII will target both value-oriented mature companies and growth-oriented businesses with established operating track records. MDP employs an investment style that focuses primarily on the quality of the business, its prospects and its leadership and only secondarily on the type of investment structure. Having the experience and expertise to be flexible in terms of stage and structure provides the Firm with a broad opportunity set, and this flexibility allows the Principals to approach owners and management teams with a wider range of solutions. The Firm has deployed approximately 70% of its capital in buyout transactions and approximately 30% in growth equity transactions across its seven funds, and the expectation is that Fund VIII will ultimately have a similar composition.

Madison Dearborn's history in Chicago dates back to the early 1980s when the founders of MDP began investing on behalf of First Chicago Venture Capital. Over the last four decades, the Principals have built a leading private equity franchise based in the Midwestern United States. The Firm's strong reputation and extensive network of contacts and relationships in the region provide a clear competitive advantage in sourcing transactions. The Principals are deeply involved in the Chicago and Midwest business, civic, and philanthropic communities, including representation on the boards of many of the region's prominent universities, hospitals and museums as well as business, economic, and charitable organizations. This extensive network of relationships leads to deal flow with limited or no competition and often provides MDP with a decisive competitive angle when other potential buyers are involved. Having invested in 33 companies located in the Midwest since the Firm's formation in 1992 and having reviewed several hundred investment opportunities in the region, the Principals have built an extensive network of relationships with executives and owners over the years.

IV. *Investment Performance*

Previous fund performance as of June 30, 2019 is shown below. Historical MDP performance is provided here:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
MDCP I	1992	$550 million	--	28.1%	3.4x	3.4x
MDCP II	1996	$925 million	--	22.0%	2.3x	2.3x
MDCP III	1999	$2,220 million	--	8.6%	1.5x	1.5x
MDCP IV	2000	$4,036 million	--	14.0%	1.9x	1.9x
MDCP V	2006	$6,515 million	--	7.1%	1.6x	1.6x
MDCP VI	2008	$4,057 million	--	23.7%	2.1x	1.6x
MDCP VII	2015	$4,435 million	$100 million	10.9%	1.2x	0.1x

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

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 D

DISTRESSED/OPPORTUNISTIC MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Marathon Distressed Credit Fund, L.P.
Type of Fund:	Distressed Corporate Credit
Total Fund Size:	$2 billion
Fund Manager:	Marathon Asset Management, L.P.
Manager Contact:	James Atwater One Bryant Park, 38th Floor New York, New York 10036

II. Organization and Staff

Marathon Asset Management was formed in 1998 by Bruce Richards (Chairman and Chief Executive Officer) and Louis Hanover (Chief Investment Officer), to seek attractive absolute returns through investments in the global credit markets, with long-term goal of building a world-class asset management platform. Marathon's core competency is opportunistic investing in the global corporate, emerging market and structured credit markets based on fundamental, bottom-up research across distinct investment funds, managed vehicles and separate accounts. Marathon Asset Management is a global credit manager with approximately $17.3 billion of capital under management as of July 31, 2019. Marathon employs approximately 170 employees globally, approximately 84 of whom are investment professionals. Marathon is headquartered in New York with investment offices in London and Singapore.

Marathon is owned by the Partners of the Firm, which consist of Bruce Richards (Chairman and Chief Executive Officer), Louis Hanover (Chief Investment Officer), Andrew Rabinowitz (President & Chief Operating Officer), Jamie Raboy (Chief Risk Officer), Andrew Springer (Head of Structured Credit), Gabriel "Gaby" Szpigiel (Head of Emerging Markets), Andrew Brady (Co-Head of Corporate Credit) and Jeff Jacob (Co-Head of Corporate Credit).

In June 2016, Blackstone Strategic Capital Holdings Fund, a vehicle managed by Blackstone Alternative Asset Management, acquired a passive, minority interest in the Investment Manager. The Principals continue to maintain autonomy over the Investment Manager's business management, operations and investment processes following this transaction.

III. Investment Strategy

Marathon will look to construct a portfolio of distressed, dislocated, and restructuring corporate credit opportunities in complex situations with attractive risk-adjusted return characteristics. Core holdings of the Fund will include bankruptcy reorganizations, liquidations, rescue lending, distressed exchanges, debtor-in-possession financings, and dislocated credit. Marathon intends to target investments in stressed and deeply distressed companies that are often going through or preparing for some form of a restructuring process. Marathon's investment team seeks to identify the portion of the capital structure with the greatest asymmetry of potential reward relative to their fundamental view of the risk of the investment and in the context of the most likely outcome of the restructuring process. Marathon often takes an active role in a restructuring process, such as leading creditor's committees, when appropriate to advocate an outcome consistent with their investment view.

Additionally, Marathon will look to invest in dislocated or mispriced capital structures where there is no pending or ongoing credit event, but the price of a particular capital instrument does not reflect Marathon's view of the underlying risk of the investment. These investments may involve outright long-positions in individual loans or securities or investments in multiple parts of a single capital structure that we believe will diverge or converge from their current trading levels.

Marathon seeks to identify corporate credit-related events, such as corporate liability management activities or deleveraging and improving corporate credit profiles that are not reflected in a security or loans trading levels. These types of events could include activities such as new equity capital raises, discounted debt retirements, maturity extension risks or companies experiencing fundamental earnings improvements.

Marathon has been investing in distressed securities since its inception in 1998, over which time the investment team has been responsible for committing over $30 billion to distressed investments. Marathon's corporate credit investment team has an average of 18 years of experience investing in bankruptcy reorganizations, dislocated credit, distressed exchanges, rescue loans, debtor-in-possession loans, liquidations and sovereign restructurings.

Since 2008, Marathon has raised capital for over 10 closed-end draw down vehicles to take advantage of specific market opportunities. However, it has been over 10 years since Marathon raised a dedicated distressed corporate investment vehicle in the U.S. as the firm has sought to identify the best risk-adjusted return across asset classes and geographies. The firm believes the opportunity for strong risk-adjusted returns in distressed corporate credit is imminent and has created a fund structure to take advantage of current opportunities as well as a broader set of opportunities following market dislocation.

Investment Triggers

Marathon may invest up to 30% of its aggregate capital commitments prior to the occurrence of an Investment Trigger (as defined below) but may not invest in excess of 30% of capital commitments, in each case measured at the time of investment, until an Investment Trigger has occurred unless the investment manager receives the consent of the Advisory Committee. Once an Investment Trigger has occurred, the Partnership may continue to make investments in excess of 30% of capital commitments, regardless of whether the criterion of any Investment Trigger continues to be satisfied.

"Investment Trigger" means:

- High Yield spreads reach a level of +750bps or more based on the Bank of America Merrill Lynch High Yield Index (H0A0 Index, sourced from Bloomberg); or

- 20% of bonds in the Bank of America ML High Yield index (sourced from Bloomberg) trade at a price of <80% of par; or

- The trailing 12 month High Yield default rate reaches 4% or higher as reported by Bank of America Global Research.

IV. Investment Performance

Previous fund performance as of June 30, 2019 is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI
Corporate Debt Opportunities Fund	2009	$400 Million	-	16.7	2.0x	1.91x
Public Private Investment Partnership	2009	$949 Million	-	24.6%	1.8x	1.7x
European Credit Opportunity I	2011	$974 Million	-	9.1%	1.3x	1.19x
European Credit Opportunity Fund II	2014	$1.1 Billion	-	9.6%	1.5x	.68x
European Credit Opportunity Fund III	2015	$692 Million	-	15%	1.4x	0x

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

V. Investment Period and Term

The Fund's investment horizon is based on its 30-month Investment Period and 30-month Harvest Period. The conclusion of the Investment Period and/or the Harvest Period may be extended for a one-year period in the sole discretion of the General Partner and for an additional one-year period with the consent of the Advisory Committee.

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

REAL ESTATE MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Rockwood Capital Real Estate Partners Fund XI, L.P.
Type of Fund:	Real Estate – Value-Add
Target Fund Size:	$1.25 billion
Fund Manager:	Rockwood
Manager Contact:	Tara McCann 140 East 45th Street New York, NY 10017

II. Organization and Staff

Rockwood Capital, LLC ("Rockwood" or the "Firm") is forming Rockwood Capital Real Estate Partners Fund XI, L.P. (the "Fund" or "Fund XI") to make value add investments in commercial real estate. Fund XI will continue Rockwood's real estate investment activities which are focused on the acquisition of equity or debt interests in properties, principally in the United States, across a broad range of geographical markets and product types.

Rockwood was formed in 1995 by Neil Smith, Ed Kavounas, Walter Schmidt, Bob Gray, and Peter Falco. The firm remains 100% privately-owned with nine active partners and is lead by a management committee consisting of Walter Schmidt, Tyson Skillings and Peter Kaye. As of June 2019, the firm managed nearly $8.4 billion of equity commitments across its funds and separate accounts. Rockwood is headquartered in New York City and has additional offices in San Francisco and Los Angeles with approximately 73 employees focused on real estate.

Since inception, Rockwood has invested approximately $30.7 billion in gross asset value in equity and debt investments across a broad spectrum of property types. Of the over 400 assets Rockwood has purchased, the majority are office, multifamily, hotel, and retail assets. Approximately 80% of the current assets are office or multifamily.

III. Investment Strategy

Rockwood Capital Real Estate Partners Fund XI is the latest offering in a series of Rockwood-sponsored "value creation" real estate investment vehicles that date back to 1990. The Fund will focus its investment activities on real estate and real estate related assets within the United States. It will target office and other workspace, multifamily, and hotel assets. Fund XI will employ active asset management to reposition, re-lease, rehabilitate, and/or develop real estate assets, but will not pursue investment opportunities predicated on significant land entitlement.

The Fund will seek to make investments across Boston, New York City, Washington D.C. Miami, Austin, Denver, Phoenix, San Diego, Los Angeles, San Francisco, Portland and Seattle. These target markets are major U.S. metropolitan areas with highly educated workforces and high household incomes, and where growth is being driven by knowledge-based industries that are prospering from technological advances, globalization, and other socioeconomic trends. Rockwood targets mixed use locations with a focus on the following: collective intelligence (educated labor force and strong research/education institutions), growth and capital flows, infrastructure / public transit / walkable, and culture.

Rockwood believes that there is significant opportunity for the Fund to create value by transforming under-improved properties with certain positive attributes into valuable properties that will attract multiple buyers when Rockwood decides to sell. Fund XI will look to acquire well-located assets with upside potential that can be realized through renovation, re-tenanting, redevelopment, development and/or improvement in property management and operations. Examples of such investments could include:

- <u>Office</u>: Renovating office buildings with "good bones" to appeal to today's tenants by converting largely private office space to open floor plans, improving internet connectivity, adding or enhancing common areas for tenant recreation, and offering tenant concierge services;

- <u>Multifamily</u>: Renovation/redevelopment of Class A or B assets in locations with outstanding demographics and select development of state-of-the-art product;

- <u>Hotel</u>: Repositioning a higher or select-service hotel by upgrading common areas and guest rooms, changing the hotel branding and replacing the management team; and/or

- <u>Retail</u>: Reposition a pedestrian-friendly urban retail asset in areas with strong demographics.

Fund XI will pursue a mix of assets, some with income in place and others where the business plan will require some time to put income in place. In so doing, the Manager will seek to implement its risk/return and "speed to income" focused "bucket classification system" on behalf of the Fund to construct a diverse and balanced portfolio that has a combination of current return and value creation upside. More specifically, each investment, at inception and over time as value creation plans are implemented, will be classified into one of three "risk buckets". The first risk bucket will be comprised of assets with an income stream already in place that Rockwood will endeavor to enhance, either through growth of the income or improvement in the income (e.g., improvement in duration or credit). The second risk bucket will be comprised of assets that have more modest in-place income and require more comprehensive value creation strategies (relative to the first risk bucket) to create value and stabilize income (expected within the first 12 to 24 months of investment). The third risk bucket will be comprised of substantially vacant buildings and development opportunities, generally with no current cash flow at acquisition and typically require 24 to 36 months to put income in place. Investments made by the Fund will be reclassified over time. Generally, investments will move from higher risk buckets to lower risk buckets as business plans are implemented and income is put into place.

IV. *Investment Performance*

Previous fund performance as of June 30, 2019 is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Fund I	1990	$266.1 million	--	19.6%	1.7x	1.7x
Fund II	1995	$82.6 million	--	30.7%	2.2x	2.2x
Fund III	1998	$221.0 million	--	14.7%	2.1x	2.1x
Fund IV	2000	$366.3 million	--	24.2%	1.8x	1.8x
Fund V	2003	$460.0 million	--	12.1%	1.4x	1.4x
Fund VI	2005	$657.0 million	--	1.4%	1.1x	1.1x
Fund VII	2006	$1,094.0 million	--	N/A	0.7x	0.5x
Fund VIII	2008	$963.9 million	--	19.1%	1.6x	1.6x
Fund IX	2012	$678.0 million	--	13.9%	1.4x	1.0x
Fund X	2015	$1,100.0 million	$100 million	4.3%	1.1x	0.1x

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

V. *Investment Period and Term*

The fund will have a three-year investment period and a nine-year term, with the potential of two 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 F

PRIVATE CREDIT MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	HPS Mezzanine Partners 2019, L.P.
Type of Fund:	Private Credit
Total Fund Size:	$8 Billion
Fund Manager:	HPS Investment Partners, LLC
Manager Contact:	Adam Jordan 1320 Main Street, Suite 300 Columbia, SC 29201

II. Organization and Staff

HPS Investment Partners, LLC ("HPS") formerly known as Highbridge Principal Strategies, LLC, has established the Fund, a Delaware Limited Partnership, to invest in privately negotiated mezzanine strategies. HPS Mezzanine Management 2019, LLC, a subsidiary of HPS, will serve as the investment manager for the Fund.

HPS is a leading global investment firm with a focus on non-investment grade credit. Established in 2007, HPS has 139 investment professionals and over 340 total employees as of October 1, 2019, and is headquartered in New York with 10 additional offices globally. HPS was established as a unit of Highbridge Capital management, LLC ("HCM") a subsidiary of J.P. Morgan Asset Management ("JPMAM"). In March 2016, the principals of HPS acquired HPS from JPMAM, which retained HCM's hedge fund strategies. As of October 1, 2019, HPS had approximately $58 billion of assets under management.

III. Investment Strategy

HPS will seek to generate current returns and long-term appreciation through investments in mezzanine securities, which are high-yielding fixed and floating rate debt and debt-like instruments. Mezzanine securities may include subordinated debt (such as second lien and unsecured debt), preferred equity and convertible securities and may be accompanied by equity-related securities (such as options or warrants) and/or select common equity investments. Mezzanine securities typically represent the portion of the issuer's capital structure between senior secured debt and common equity. They are generally senior in rank to common equity but subordinated to any senior secured indebtedness and are typically used by companies as growth capital to fund acquisitions, refinance existing indebtedness or recapitalize their balance sheets. HPS believes mezzanine investments offer investors the combination of a high contractual coupon and current income, with significant downside protection through highly negotiated agreements with customized covenants.

HPS believes there is an attractive opportunity to provide mezzanine financing to large companies ($300 million weighted average EBITDA in prior fund) that prefer or need this type of funding as an alternative to traditional financing sources. Global regulatory actions stemming from the 2008 financial crisis have significantly increased capital requirements and costs for banks to underwrite and syndicate non-investment grade credit commitments. Banks' unwillingness to take underwriting risk for subordinated debt has led them to focus on very large, existing issuers and increase the "flex" provisions in their commitment papers, allowing them to significantly change pricing and terms of a new issue to help it clear the market. These actions have narrowed the group of issuers that are able to or want to access the publicly syndicated credit markets and, in combination with ongoing market volatility, have led corporate issuers to seek dedicated private credit platforms that invest and hold the issuers' securities for the long term. A mezzanine financing solution allows issuers to: (a) avoid the uncertainty and increasing cost of obtaining syndicated financing commitments, (b) negotiate customized structures and terms, (c) work collaboratively with a single long-term financing provider, (d) act quickly if an opportunity requires financing in a short period of time, (e) limit burdensome public reporting/maintain confidentiality of financial information and (f) minimize management team distraction and time associated with a syndicated financing.

HPS believes that the diversified sourcing, scale, flexibility of capital and experience of the investment team allow it to offer creative capital solutions to companies while providing investors with attractive returns and significant downside protection. The diversity and breadth of its sourcing platform combined with a favorable demand environment for non-investment grade capital has allowed HPS to remain highly selective on investment opportunities and have limited dependence on any single industry or deal source. The Fund intends to leverage HPS's global credit platform and relationships to continue to source attractive investments directly from private and public companies as well as private equity-backed businesses.

HPS generally intends to pursue investments where the members of the Mezzanine Team possess a deep knowledge of the sector and the company, generally focusing on companies that demonstrate, or are expected to develop: (i) sustainable advantages and meaningful barriers to entry, (ii) strong market share, (iii) substantial EBITDA margins and free cash flow and (iv) proven, experienced management teams. HPS expects to be the sole or lead investor in each investment and will consider a variety of transactions including recapitalizations, refinancing, restructurings, acquisitions and leveraged buyouts.

The Fund will have global investments capabilities but will focus on large-cap companies in North America and Europe, with 60% to 80% of the portfolio anticipated to be in North America.

IV. Investment Performance

Previous fund performance as of June 30, 2019 for HPS Mezzanine funds is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Mezzanine Partners I	2008	$2.1 Billion	-	6.6%	1.3x	1.1x
Mezzanine Partners II	2012	$4.4 Billion	-	14.8%	1.5x	1.1x
Mezzanine Partners III	2016	$6.6 Billion	-	12.9%	1.2x	0.1x

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

V. Investment Period and Term

The investment period will be four years from the first closing date. The term of the fund will be ten years from the first closing date.

This document is a summary of more detailed information provided in the Fund's Confidential Offering Memorandum (the "OM" or "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 G

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Vista Equity Partners Perennial, L.P.
Type of Fund:	Private Equity
Total Fund Size:	$3 billion
Fund Manager:	Vista Equity Partners Management, LLC
Manager Contact:	Julian Bostic 2 Prudential Plaza, 180 North Stetson Ave Suite 4000 Chicago, IL 60601

II. Organization and Staff

Vista Equity Partners, ("Vista" or the "Firm") is forming Vista Equity Partners Perennial, L.P. (the "Fund") to acquire a portfolio of operationally mature enterprise software businesses for combination and assembly into a platform solutions to help digitize large and growing industrial verticals on a global scale.

Vista was formed in 2000 by Robert F. Smith, Stephen Davis and Brian Sheth to pursue buyout transactions of enterprise software businesses and technology-enabled solutions companies. Currently the Firm has over 460 employees, including over 147 investment professionals and over 135 members of the Vista Consulting Group ("VCG"). Vista maintains offices in Austin, Chicago, Oakland, San Francisco and New York. Over its 19 year history, Vista has raised over $52 billion and made over 290 acquisitions in the enterprise software, data and technology-enabled solutions sector.

The Perennial strategy will be executed by a fully dedicated team comprised of Investment Principals James Hickey and Burke Norton, Operating Principal Vince Burkett, and Vice President Anand Anbalagan. Vista's executive team of Robert Smith, Brian Sheth, and David A. Breach will also be actively involved in the strategy. The dedicated team will be supported by the broader Vista platform's associates and analysts, as well as the Vista Consulting Group.

III. Investment Strategy

Vista Perennial Fund will seek to create platforms with controlling interests in operationally mature, middle market, upper middle market and large cap enterprise software, data and technology-enabled solutions companies. To execute the Fund's strategy, target companies are expected to be mature from an operational perspective, running at high levels of efficiency where the traditional approach taken by other Vista funds of operational transformation is not necessary. Vista's value creation in Perennial will come from the Firm's ability to identify and acquire the optimal companies, effecting combinations of these companies into platforms via full or partial M&A, and enhancing product development and processes.

Value Creation Opportunities:
While Vista funds have historically invested in portfolio companies requiring significant operational transformation to unlock their potential value, companies targeted by Perennial are not expected to require significant operational transformation due to their operational maturity. Instead, Vista intends to create value for the Fund through the following:

- **Vertical Identification:** Appropriate industry verticals will be identified by analyzing a number of factors including: large end markets; numerous and highly fragmented software providers; customers seeking workflow digitization and willingness to invest in such initiatives; industries where software in embedded in critical workflows; and industries where workflows are conducive to digitization. Of the 68 industries and 157 sub-industries within the Global Industry Classification Standard ("GICS"), Vista has identified 15 industry verticals that could be of interest to the Perennial strategy, of which five may be immediately actionable.

- **Asset Identification:** Vista will target companies in specific industry verticals that have strong customer and revenue retention, high levels of contractually recurring revenue, strong competitive positioning, operational maturity with in-place best practices, and attractive EBITDA margins.

- **Add-on Acquisition:** In addition to core asset acquisition, combination and integration, Vista intends to identify and execute add-on acquisitions that provide complimentary offerings to existing core products and services.

- **Vertical Integration:** Workflow digitization within an industry such as education or real estate requires consolidation and integration of various point solutions. Perennial will leverage Vista's ability to identify and acquire the workflow solutions within a given industry, as well as its operational ability to integrate these solutions into one product offering.

- **Horizontal Integration:** Integration of workflows across industries is also a significant opportunity for the Fund. For example, the consolidation of Customer Relationship Management solutions across the Real Estate, Education or Insurance sectors could result in the creation of a single, best-in-class solution and significantly increase addressable market opportunities.

- **Product Development:** Vista intends to employ a flexible product development model, with the ability to develop products on a standalone basis or with an integrated approach across a combined industry vertical platform. Vista will leverage its operational expertise when deciding whether to integrate solutions, determining appropriate go-to-market strategies, running technology assessment models of nex products and assessing technology combination issues to best serve each targeted industry vertical.

Big Data & Advanced Technologies
More recently, Vista has begun establishing expertise in leveraging the value of data and adopting advanced technologies including cognitive computing, artificial intelligence and machine learning within its existing portfolio of companies across its different funds. Vista believes the targeted companies will be able to contribute complimentary datasets to create a data platform that will help create value for customers.

- *Data consolidation:* While companies targeted by the Fund are expected to hold vast amounts of data, few have considered their datasets holistically – or with other datasets to enhance insights, resulting in predictive or prescriptive analysis. Vista believes data monetization strategies exist within these companies and that value exists from improved efficacy and richer insights by consolidating supplementary or complimentary datasets of multiple operationally mature companies.

- *Combined advanced technology initiatives:* Vista believes advanced technologies are quickly becoming the foundation for future transformation of businesses around the globe. When applied to platforms of larger scale and to larger volumes of data, the potential impact is greater than when applied independently to each of the constituent companies. Vista believes it has identified an opportunity for value creation via increased automation as well as enhanced and new products that will emerge from applying these technologies.

IV. *Investment Performance*

Previous fund performance as of June 30 2019 for Vista Equity Partners Flagship funds is shown below. Note that Vista began managing third–party capital in Vista Equity Partners (VEP) Fund II:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
VEP II	2000	$1 billion	-	29.2%	2.7	2.7
VEP III	2007	$1.3 billion	-	27.4%	2.5	2.4
VEP IV	2011	$3.5 billion	-	17.8%	2.0	1.3
VEP V	2014	$6.0 billion	-	23.8%	1.9	0.8
VEP VI	2016	$11.1 billion	-	18.4%	1.3	0.2
VEP VII	2018	$16.8 billion	-	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 Multiple of Invested Capital (MOIC) were provided by Vista.

V. Investment Period and Term

The assembly period will be eight years from the commencement of investment activities. The Fund does not have a fixed term. However, the General Partner may at any time pursue any of the following liquidity options: (i) a public offering, (ii) issuance of stock or equity interests, (iii) a securitization of future income streams, (iv) a sale or transfer of assets, or (v) any other transaction that achieves a similar liquidity effect for the Partners. In addition, at the expiration of the assembly period and each four-year anniversary thereof, the General Partner will make reasonable efforts to assist any Limited Partner in transferring or selling its interest in the Fund.

* *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.*

TAB E

Investment Advisory Council Report

Proposed Statutory Amendments to Investment Authority

This page intentionally left blank.

DATE: November 25, 2019

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and SBI Staff

SUBJECT: Proposed Statutory Amendments to Investment Authority

Staff is recommending that the State Board of Investment authorize the Executive Director to seek a legislative amendment which would authorize investments in co-investments and separate accounts through the SBI's Private Markets program, bank loans through the SBI's Public Markets program, and exempts liquid alternatives from the 35% market capitalization restriction.

Co-investments and Separate Accounts

Each quarter, the Private Markets team considers numerous investment opportunities for the State Board of Investment. Most of this deal flow represents the traditional commingled limited partnership fund structures. Over the past decade, large institutional investors have negotiated new investment arrangements in the form of co-investments and separate accounts with more favorable economic terms. In most cases, these situations represent investment opportunities similar to traditional fund structures but with lower fees and lower carried interest. The main difference between traditional structures and co-investments/separate accounts is that the latter may be customized by the general partner for larger limited partners such as the SBI. Investing in co-investments or separate accounts will result in significant investment savings versus being limited to investing in the traditional fund structures only.

Staff is recommending proposed legislation which permits investments in separate accounts and co-investment opportunities and exempts these investments from certain restrictions. These investments can benefit the portfolio in the following ways:

(i) Provide access to the same type of underlying investments as a commingled vehicle, but at lower cost;

(ii) Generate attractive risk-adjusted returns through investments that cannot easily be made via a commingled vehicle; and

(iii) Allow for the SBI to impose investment restrictions and/or guidelines that protect the interests of the plan, or allow for the SBI to construct a unique portfolio specific to the SBI's needs.

For instance, a General Partner may be unwilling to grant significant fee concessions on a commitment to a main commingled fund, but may instead be willing to manage a separate pool of capital for the SBI alongside the SBI's commitment to the main fund on a lower-fee or no-fee basis, and without carried interest. In this hypothetical example, by committing $70 million to the main fund and $30 million to the separate pool, rather than $100 million to the comingled fund, the SBI would substantially lower both the management fees charged on the total amount of capital, as well as the carried interest shared with the General Partner. Depending on the structure of the separate pool, the SBI may be the only limited partner in the fund or may participate in a co-investment opportunity with one or more additional limited partners.

If these investment opportunities are prudent and provide economic benefits that would accrue to plan participants, it is within the Executive Director's fiduciary duty to consider them. Currently, however, Minn. Stat. § 11A.24, subd. 6(b) forecloses the ability to participate in separate accounts and most co-investment opportunities because the SBI would hold up to a 100% interest in the investment vehicle and the vehicle may not have four other participants. To address this issue, the proposed amendment exempts these investments from the requirements that the SBI's participation in the investment vehicle be limited to 20% and that the investment have four unrelated owners. Importantly, the amendment preserves the requirement that the SBI participate in investment vehicles that have limited liability, which would limit the SBI's co-investment opportunities to indirect ownership through appropriate investment vehicles. Finally, any investments in separate accounts or co-investment opportunities would count against the 35% portfolio limitation for alternative investments.

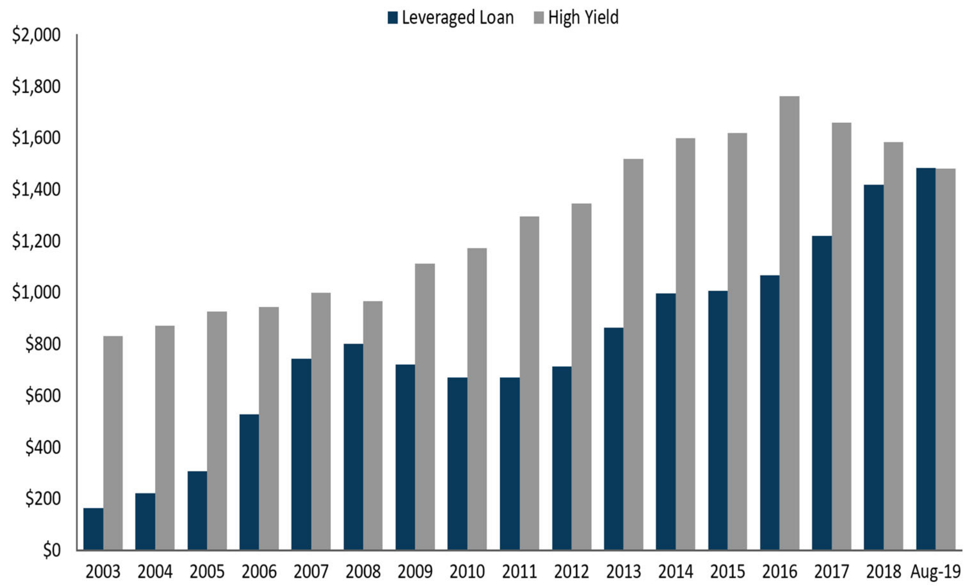
Bank Loans

Staff is seeking the authority to invest in bank loans to further diversify the SBI's portfolio by allowing investment in companies and structures that cannot be accessed in either the high yield or investment grade corporate market. Because bank loans (also referred to as leveraged loans) are not considered securities, the SBI does not currently have statutory authority to invest the asset class. With additional authority the SBI could invest in bank loans via both the primary and secondary market.

Bank loans are a unique asset class with both offensive and defensive characteristics. Staff believes that an allocation to bank loans – either on a stand-alone basis or as part of a fixed income asset allocation product such as Multi-asset Credit or Core Plus – would provide an opportunity for enhanced yields and broader diversification within the SBI's fixed income investment program.

The bank loan market has grown steadily since the mid-1990s, and outstanding loans now exceed $1.4 trillion, making the bank loan market as large as the high yield bond market (see Figure 1).

Figure 1. Bank loan vs. high yield market size, $ billions: 1999-2019



Note: As of 08/2019. Includes US and European High Yield Bonds and Leveraged Loans
Source: JPM

Bank loans are loans provided by lenders to companies in order to support mergers and acquisitions, recapitalization of the balance sheet, and other activities within the company. Bank loans are typically the senior-most debt in a company's capital structure and in most cases are secured by collateral and have covenants which require the borrower to maintain certain financial metrics.

The term to maturity for a bank loan will vary by borrower but is usually five to seven years. Bank loans typically pay a floating rate coupon based on short-term reference rate, such as 3-month LIBOR, plus a spread. The spread on a particular bank loan will vary based on credit quality of the company and conditions in the market at the time of issuance. Bank loans are typically repayable at par at any time by the borrower without penalty.

While the typical borrower has a leveraged capital structure and tends to be smaller in size than an average investment grade issuer, bank loans' senior placement in the capital structure, collateral security and (commonly) covenants can make loans attractive compared to high yield bonds, which are largely unsecured. In addition, the floating rate nature of bank loans reduces interest rate risk and can provide inflation protection.

As bank investment products, the bank loan market is overseen by banking regulators, including the Office of the Comptroller of the Currency (OCC), the FDIC and the Federal Reserve. New issue bank loans are marketed via an offering memorandum (versus a prospectus for SEC-registered securities) and may be offered only to institutional investors. There is a robust secondary market for trading bank loans between institutional investors, with investors usually trading through dealer desks at the large underwriting banks.

Liquid Alternatives

SBI staff and the IAC have discussed options for further diversifying the Combined Funds portfolio beyond public equities, fixed income, and private markets. Specifically, we have discussed the potential use of liquid alternative strategies. These assets can include more common assets such as real estate investment trusts (REITs) or master limited partnerships (MLPs). However, many investors like the SBI are focusing more complex strategies in this area.

These strategies can be benchmark unconstrained, aim to generate an absolute return and have the ability to take both long and short positions. These investments provide access to unique strategies which may utilize non-traditional asset classes such as commodities, currencies, or options/derivatives. Additionally, they may implement traditional "alternative" investment strategies such as equity long-short, market-neutral relative value, trend-following or value, momentum, carry, or quality strategies. Similar to investments in private markets, liquid alternatives may be structured as limited liability companies, limited partnerships, or separate accounts. Importantly, however, the strategies will typically invest in marketable securities and other liquid instruments.

While Minn. Stat. §11A.24, subd. 6(a) currently authorizes investments in these types of vehicles, staff believe it is appropriate to provide a separate authorization for liquid alternatives because, unlike private market investments, they invest in marketable securities and provide for periodic liquidity. The proposed amendment contains a separate authorization for liquid alternatives and exempts these investments from the 35% statutory market capitalization restriction. The exemption is appropriate because the concentration limit protects the portfolio from illiquidity, a concern mitigated with respect to liquid alternatives due to their periodic liquidity features.

Attachment A includes sample language for a proposed amendment to Minn. Stat. § 11A.24, subd. 6(a) and (b).

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation to pursue proposed legislation permitting Private Market investments in separate accounts and co-investment opportunities, while exempting these investments from restrictions which currently prohibit separate accounts and co-investment; permitting investments in bank loans; exempting liquid alternatives from the statutory 35% market capitalization restriction currently applicable to investments in the Private Markets portfolio; and any corresponding administrative or conforming changes consistent with the foregoing.

ATTACHMENT A

SAMPLE AMENDMENT

Minn. Stat. § 11A.24, subd. 6(a) and (b)

(a) In addition to the investments authorized in subdivisions 1 to 5, and subject to the provisions in paragraph (b), the state board is authorized to invest funds in:

(1) equity and debt investment businesses through participation in limited partnerships, trusts, private placements, limited liability corporations, limited liability companies, limited liability partnerships, and corporations;

(2) real estate ownership interests or loans secured by mortgages or deeds of trust or shares of real estate investment trusts through investment in limited partnerships, bank-sponsored collective funds, trusts, mortgage participation agreements, and insurance company commingled accounts~~, including separate accounts~~;

(3) resource investments through limited partnerships, trusts, private placements, limited liability corporations, limited liability companies, limited liability partnerships, and corporations; ~~and~~

(4) investment vehicles that are co-investments or separate accounts;

(5) liquid alternatives;

(6) bank loans; and

~~(4)~~ **(7)** international securities~~.~~

(b) The investments authorized in paragraph (a) must conform to the following provisions:

(1) the aggregate value of all investments made under paragraph (a), clauses (1) to ~~(3)~~ **(4)**, may not exceed 35 percent of the market value of the fund for which the state board is investing;

(2) there must be at least four unrelated owners of the investment other than the state board for investments made under paragraph (a), clause (1), (2), or (3);

(3) state board participation in an investment vehicle is limited to 20 percent thereof for investments made under paragraph (a), clause (1), (2), or (3); and

(4) state board participation ~~in a limited partnership~~ **in an investment vehicle** does not include a general partnership interest or other interest involving general liability. The state board may ~~not engage in any activity as a limited partner~~ **not participate in any investment vehicle in a manner** which creates general liability.

(c) All financial, business, or proprietary data collected, created, received, or maintained by the state board in connection with investments authorized by paragraph (a), clause**s** (1)**—(5)**~~, (2), or (3),~~ are nonpublic data under section 13.02, subdivision 9. As used in this paragraph, "financial, business, or proprietary data" means data, as determined by the responsible authority for the state board, that is of a financial, business, or proprietary nature, the release of which could cause competitive harm to the state board, the legal entity in which the state board has invested or has considered an investment, the managing entity of an investment, or a portfolio company in which the legal entity holds an interest. As used in this section, "business data" is data described in section 13.591, subdivision 1. Regardless of whether they could be considered financial, business, or proprietary data, the following data received, prepared, used, or retained by the state board in connection with investments authorized by paragraph (a), clause**s** (1)**—(5)**~~, (2), or (3),~~ are public at all times:

(1) the name and industry group classification of the legal entity in which the state board has invested or in which the state board has considered an investment;

(2) the state board commitment amount, if any;

(3) the funded amount of the state board's commitment to date, if any;

(4) the market value of the investment by the state board;

(5) the state board's internal rate of return for the investment, including expenditures and receipts used in the calculation of the investment's internal rate of return; and

(6) the age of the investment in years.

* This amendment will also include conforming changes to other sections, including appropriate cross references.

TAB F

Report

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

INVESTMENT ADVISORY COUNCIL REPORT

DATE: November 25, 2019

TO: Members, State Board of Investment

FROM: 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
Third Quarter 2019

SBI Portfolio - Quarter and Year Performance
In the third quarter, the Combined Funds slightly underperformed the composite benchmark return (+1.0% Combined Funds versus +1.1% Composite Benchmark). Domestic equities underperformed its benchmark return (+0.8% Domestic Equity versus +1.0% Domestic Equity Benchmark), while international equities outperformed its benchmark return (-1.5% International Equity versus -1.8% International Equity Benchmark). The core fixed income portfolio met the Bloomberg Barclays U.S. Aggregate Index return of 2.3%, while the Treasury Protection Portfolio slightly underperformed the Bloomberg Barclays Treasury 5+ Year Index (Portfolio +4.5% versus Benchmark +4.6%). Lastly, private markets, subject to a one quarter valuation lag, contributed positively, returning +1.8% for the quarter.

For one year ending third quarter 2019, the Combined Funds underperformed the composite benchmark return (+4.7% Combined Funds versus +5.1% Composite Benchmark). Domestic equities underperformed its benchmark return (+2.1% Domestic Equity versus +2.8% Domestic Equity Benchmark), while international equities outperformed its benchmark return (-0.9% International Equity versus -1.2% International Equity Benchmark). The core fixed income portfolio slightly outperformed the Bloomberg Barclays U.S. Aggregate Index return (+10.4% Fixed Income versus +10.3% Fixed Income Benchmark), while the Treasury Protection Portfolio slightly underperformed the Bloomberg Barclays Treasury 5+ Year Index (Portfolio +17.0% versus Benchmark +17.2%). Lastly, private markets contributed positively, returning +8.0% for the year.

Domestic Equity
The performance of U.S. stocks was mixed and returns were muted overall. For the third quarter, the Russell 3000 Index returned +1.2%. During the same period, large-cap stocks outperformed small-cap stocks, as the Russell 1000 Index returned +1.4% while the Russell 2000 Index returned -2.4%. Over the year, for both large and small-cap stocks, and during the quarter for small-cap stocks, growth fell out of favor reversing the trend where growth traditionally outperformed value over longer time periods. The positive returns of the U.S. equity market came amidst accommodative central bank policies which helped offset concerns that an escalating trade war with China and a U.S. yield curve inversion could lead to a recession. The Utilities, Real Estate and Consumer Staples sectors had the strongest gains, while Energy and Health Care stocks lagged.

The large-cap growth managers trailed the Russell 1000 Growth benchmark (-6.3% large-cap growth versus +1.5% Russell 1000 Growth Index) for the quarter. Stock selection was negative across most sectors, led by the Technology sector. While all three managers trailed the benchmark for the quarter, Zevenbergen, with its concentrated, high growth/momentum focus, fell over 12% versus its Russell 1000 growth benchmark due to underperformance led by sizable positions in Exact Sciences Corp, Netflix, Inc. and Zillow Group, Inc.

The large-cap value managers fared better, exceeding the Russell 1000 Value (+1.8% large-cap value versus +1.4 Russell 1000 Value Index) for the quarter. Stock selection in the Consumer Discretionary sector helped performance. In terms of managers, Barrow Hanley and LSV outperformed while Earnest Partners trailed the quarterly benchmark.

The small-cap growth managers trailed the Russell 2000 Growth benchmark (-5.3% small-cap growth versus -4.2% benchmark) for the quarter. Stock selection detracted from performance, led by the Financial Services sector. Wellington outperformed for the quarter and three managers underperformed.

The small-cap value managers matched the Russell 2000 Value benchmark of -0.6% for the quarter. Overall sector allocation was positive for the quarter, with stock selection slightly detracting from performance. Two managers outperformed for the quarter and two underperformed.

For the quarter, the semi-passive managers in aggregate slightly trailed the Russell 1000 Index return. Stock selection in the Financial Services, Consumer Discretionary and Product Durables sectors contributed negatively for performance. The passive Russell 3000, Russell 1000 and Russell 2000 Index mandates matched their respective indices within expectation.

Developed International Equity
International stocks had a lackluster quarter, weighed down by slower growth in the Eurozone, uncertainty surrounding Brexit and global trade tensions. In this market environment, defensive sectors such as Consumer Staples and Utilities tend to perform well. The active developed markets managers slightly underperformed the MSCI World ex USA Standard Index (net) (-1.0% developed international versus -0.9%) for the quarter. From a country perspective, stock selection in France and Finland contributed to the underperformance, partially offset by positive stock selection in Japan and Canada. From a sector perspective, negative stock selection in Health Care (Pharmaceuticals in particular), and underweight positioning in Consumer Staples (Nestle SA, among others) contributed to the modest underperformance.

AQR's portfolio underperformed the MSCI World ex USA Standard Index (net) during the quarter. Stock selection decisions in the Materials, Industrials, Health Care and Real Estate sectors contributed negatively to performance. Stock selection overall in the United Kingdom and Japan was also negative.

Both the passive developed markets manager and the passive emerging markets manager tracked their respective indices within guideline tolerance for the quarter.

Emerging Markets Equity
Emerging market equities (EME), as measured by MSCI EME Index, produced a negative return of -4.2% during the quarter as the global economic slowdown was felt more acutely by China and EM countries than developed markets. Country performance was also wide ranging and volatile, with Argentina's stock market and peso falling 47% during the quarter on populist election results, India experiencing softness within its Banking sector, while Turkey, Egypt and Taiwan produced positive returns. On a relative basis, the SBI active program declined less than its benchmark as

the active composite returned -2.5%, versus MSCI EM -4.2%. Six managers in the active program outperformed while one manager underperformed. The overall emerging markets equity program, including passive, outperformed the benchmark return 120 basis points (-3.1% versus -4.2%) over the same period. During the quarter, the SBI opened the Netherlands at custody, allowing managers holding Naspers the ability to participate in newly listed and Amsterdam-traded Prosus, which jumped roughly 30% post-IPO. Positive allocation and selection to the Technology sector was the largest contributor to relative returns for the quarter, followed by defensive oriented Consumer Staples, though EME overall was negative on an absolute basis.

Fixed Income – Core

Overall, the SBI Fixed Income program matched the Bloomberg Barclays Aggregate benchmark performance of +2.3% for the quarter. Two of the four active SBI fixed income managers within the core fixed income pool outperformed the benchmark (+2.2% active program versus +2.3% benchmark). The three semi-passive managers in total outperformed the benchmark (+2.5% semi-passive versus +2.3% benchmark). Yields fell (prices rose) across the curve, as markets reacted defensively to trade wars between the U.S. and China, reinforced by two FOMC interest rate cuts in the quarter, bringing the target federal funds rate range to 1.75% - 2.0%. The U.S. curve remained inverted, with yields on the short and long maturities exceeding mid-range maturities, with policy makers and market participants debating the predictive qualities of such an inversion. Lastly, the curve flattened during the quarter, with yields on 10-year and 30-year maturities falling more than yields on 2-year and 3-year maturities. In this environment, managers with curve positioning underweight these long maturities found it difficult to match or exceed the benchmark. Both outperforming active managers were positioned with longer duration and curve flatteners as described above. The semi-passive managers' guidelines constraining duration and curve mismatches benefited the program during the quarter. Investment Grade corporate spreads followed equities lead and widened modestly during the quarter resulting in mixed manager performance within Investment Grade credit, while asset-backed securities and commercial mortgage backed securities with a focus on the consumer produced positive relative performance.

Fixed Income – Treasury Portfolio

During the third quarter of 2019, U.S. Treasury securities continued its rally across the curve in a "flight to quality" response to market conditions, with the 10 year Treasury yield falling from 2.00% yield to 1.67%, and 30 year Treasury yield falling from 2.50% to 2.10%. For the three months ending 9/30/2019, the three managers responsible for the Treasury Portfolio mandate (Goldman Sachs, BlackRock and Neuberger Berman) slightly underperformed the Bloomberg Barclays Treasury 5+ Year Index, returning 4.5% versus 4.6% for the benchmark. On a relative basis, short duration positioning detracted from performance, as well as managers' allocation to Treasury Inflation Protection Securities (TIPS) allocations, for which strategies tied to rising inflation expectations did not materialize. For the quarter, the Treasury Portfolio was SBI's best performing asset class in absolute terms.

Public Markets Managers' Organizational Update
Third Quarter 2019

Domestic Equity Managers

Barrow Hanley
In September 2019, Jeff Fahrenbruch, Managing Director and lead Portfolio Manager relinquished his portfolio management responsibilities as he transitions out of the organization. Jeff will remain at Barrow Hanley through the end of the year. Staff plans to meet with the manager during the fourth quarter to assess the impact of the Portfolio Manager change and will closely monitor the transition.

J.P. Morgan
During the quarter, Ethan Alderman, one of two analysts covering REITs left the firm and his replacement is being sought.

BlackRock
Jeff Smith, former Head of Global Human Resources Group, left the firm in July 2019 because he failed to adhere to company policy (no additional details provided). Following his departure, BlackRock's Vice Chairman Rob Fairbairn became interim head of Global Human Resources Group, and recently Manish Mehta who served as Global Head of ETF and Index Investments was named the new department head, reporting into BlackRock's Chairman and CEO, Larry Fink.

Developed International Equity Managers

AQR
In September 2019, Neal Pawar, Chief Technology Officer, left AQR. Steve Mock and Ian Roche, previously Head of Enterprise Architecture & Trading Engineering and Head of Portfolio Implementation Engineering respectively at AQR, have been named Co-Chief Technology Officers. In August 2019, Marcos Lopez de Prado, Head of Machine Learning, departed from AQR. He was replaced by Bryan Kelly.

State Street Global Advisors (SSgA)
During the quarter, Stan Wasilauski, Chief Technology Officer, transitioned to a new role at SSgA and was replaced by Susan Lasota. Greg Hartch, Chief Risk Officer, assumed the role of Head of Private Investments. He was replaced in the role of Chief Risk Officer by Tim Corbett.

Emerging Market Equity Managers

Neuberger Berman

In July 2019, Patrick Ru, EME analyst on the team responsible for North Asia, relocated to Hong Kong from the New York office to provide greater focus on the regions he covers. The team is increasing its focus on the Greater China region and looks to add exposure to this growing opportunity set.

Macquarie

The company received negative press as a former employee claimed retaliation following a sexual harassment lawsuit in January 2018. The woman filed a petition in Federal court with a claim against the firm regarding the arbitration process meant to resolve the matter. The SBI will monitor the situation, however no action is recommended at this time.

Fixed Income

BlackRock

Jeff Smith, former Head of Global Human Resources Group, left the firm in July 2019 because he failed to adhere to company policy (no additional details provided). Following his departure, BlackRock's Vice Chairman Rob Fairbairn became Interim Head of Global Human Resources Group, and recently Manish Mehta who served as Global Head of ETF and Index Investments was named the new department head, reporting into BlackRock's Chairman and CEO, Larry Fink.

2019 Manager Meetings

The third quarter manager reviews are noted below.

Investment Manager	Asset Class
• AQR Capital Management, LLC	International Equity
• BlackRock Institutional Trust Company, N.A.	Domestic Equity
• Columbia Management Investment Advisers, LLC	International Equity
• Goldman Sachs Asset Management, L.P.	Domestic Equity
• Goldman Sachs Asset Management, L.P.	Fixed Income
• J. P Morgan Investment Management Inc.	Domestic Equity
• J. P. Morgan Investment Management Inc.	International Equity
• Macquarie Investment Management Advisers	International Equity
• Morgan Stanley Investment Management Inc.	International Equity
• Peregrine Capital Management	Domestic Equity
• Pacific Investment Management Company LLC	Fixed Income
• Pzena Investment Management, LLC	International Equity
• Rice Hall James & Associates, LLC	Domestic Equity
• The Rock Creek Group, LP	International Equity
• Western Asset Management Company	Fixed Income
• Winslow Capital Management, LLC	Domestic Equity

Non-Retirement Manager Update
Third Quarter 2019

Fixed Income

RBC Global Asset Management
The fixed income portfolio matched the Bloomberg Barclays Intermediate Government benchmark of 2.1% for the quarter. The portfolio's underperformance from short duration positioning was largely offset by positive excess yield generated by agency debentures and mortgage pools. The portfolio's mandate limits investments in spread products such as Investment Grade corporates and structured credit, thus those asset classes has minimal effect on returns for the quarter.

Prudential Fixed Income
The fixed income portfolio return of 2.5% for the quarter outperformed the benchmark return, the Bloomberg Barclays U.S. Aggregate by 11 basis points. The U.S. Treasury curve was lower and flattened during the quarter. The portfolio's long duration positioning and overweight of long key rates (25 year) were the primary contributors to performance.

Equity

BNY Mellon
Mellon tracked its benchmark, the S&P 500, for the quarter.

Deferred Compensation Manager Update
Third Quarter 2019

Domestic Equities

Vanguard Total Stock Market Index Institutional Plus

The all cap domestic equity Fund matched the return of the CRSP US Total Market Index for the quarter with a 1.1% return. The benchmark represents 100% of the investable U.S. stock market and includes large-, mid-, small-, and micro-cap stocks regularly traded on the NYSE and NASDAQ.

The Vanguard Total Stock Market Index (Institutional Plus) is a new fund that was added to the mutual fund line up during the third quarter of 2019. This fund is available to eligible participants that use the mutual fund line up.

Vanguard Dividend Growth Fund

The Fund returned 3.5% for the quarter, which underperformed its benchmark, the NASDAQ US Dividend Achievers Select Index return of 4.2%. Unfavorable allocations and weaker stock selection in Consumer Staples weighed on performance for the quarter. The portfolio's underweight to Utilities and a small allocation to Energy, a sector not currently in the benchmark, negatively impacted relative return.

Vanguard Institutional Index Plus

The large-cap domestic equity Fund matched the return of the S&P 500 Index for the quarter with a 1.7% return.

Vanguard Mid-Cap Index

The mid-cap equity Fund tracked the benchmark, CRSP US Mid Cap Index, for the quarter with a 0.6% return.

T. Rowe Price

The small-cap equity portfolio outperformed the Russell 2000 for the quarter with a 0.2% return versus the benchmark return of -2.4%. Stock selection was the main contributor to relative performance; primarily in the Financials and Energy sectors in addition to an underweight to Energy companies. Stock choices in Consumer Discretionary and Communication Services were also strong.

International Equities

Fidelity Diversified International

The international equity portfolio returned 0.3% for the quarter outperformed the MSCI EAFE Free benchmark return of -1.1%. Stock selection was the main contributor for the outperformance, primarily in Information Technology and Industrial sectors. Regionally, favorable stock selection in the U.S. and emerging markets contributed the most to relative performance.

Vanguard Total International Stock Index
The international equity portfolio matched the benchmark, the FTSE Global All Cap ex US Index, for the quarter with a -1.7% return. In the short-term, the international portfolio will tend to have higher tracking error because of fair value pricing, which tends to smooth out over time. Fair value pricing most frequently occurs when a current price is not readily available and is not reflective of its current value. This most frequently occurs when the foreign market is closed while the U.S. market is open.

Fixed Income

Dodge & Cox Income Fund
The fixed income portfolio underperformed the benchmark, the Bloomberg Barclays Aggregate, for the quarter with a 1.2% return versus the benchmark return of 2.3%. As treasury yields declined, the portfolio's lower duration position relative to the benchmark detracted from returns. The portfolio's smaller allocation to long-term (10+ years) bonds also detracted as the long end of the yield curve declined more than the curve on average.

Vanguard Total Bond Market Index
The fixed income Fund returned 2.4% for the quarter outperformed the benchmark, the Bloomberg Barclays U.S. Aggregate Index, return of 2.3% for the same time period. 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 balanced portfolio return of 1.7% matched 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 outperformed the benchmark, the 3 Year Constant Maturity Treasury plus 0.45%, return for the quarter with a 0.7% return versus the benchmark return of 0.5%. An overweight to spread securities was the primary driver of performance. Specifically, overweight's to Corporates, ABS, CMBS, and other Government securitizations all proved additive, as those sectors outperformed U.S. Treasuries with similar maturity profiles.

During the third quarter there were two Senior Client Service Relationship Managers who left the firm. These changes are in addition to the announcement made last quarter of the planned retirement for several senior personnel prior to the end of the year. Staff is in the process of completing a full due diligence review of the stable value strategy.

State Street Global Advisors
The money market fund matched the 90 Day T-Bill return of 0.6%.

This page intentionally left blank.

TAB G

Report

AON Market Environment Report

This page intentionally left blank.

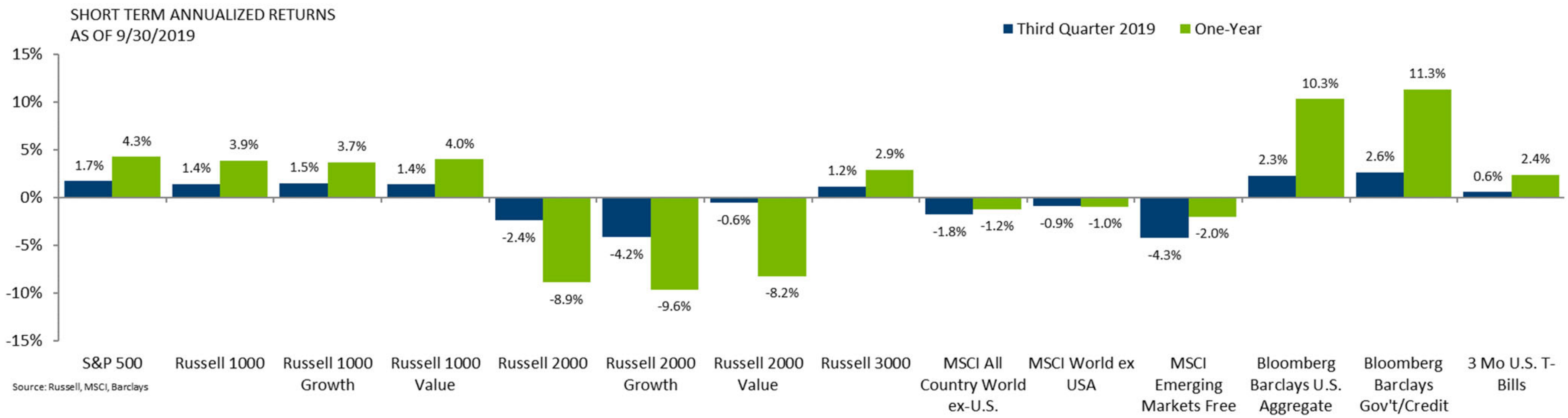
Market Environment

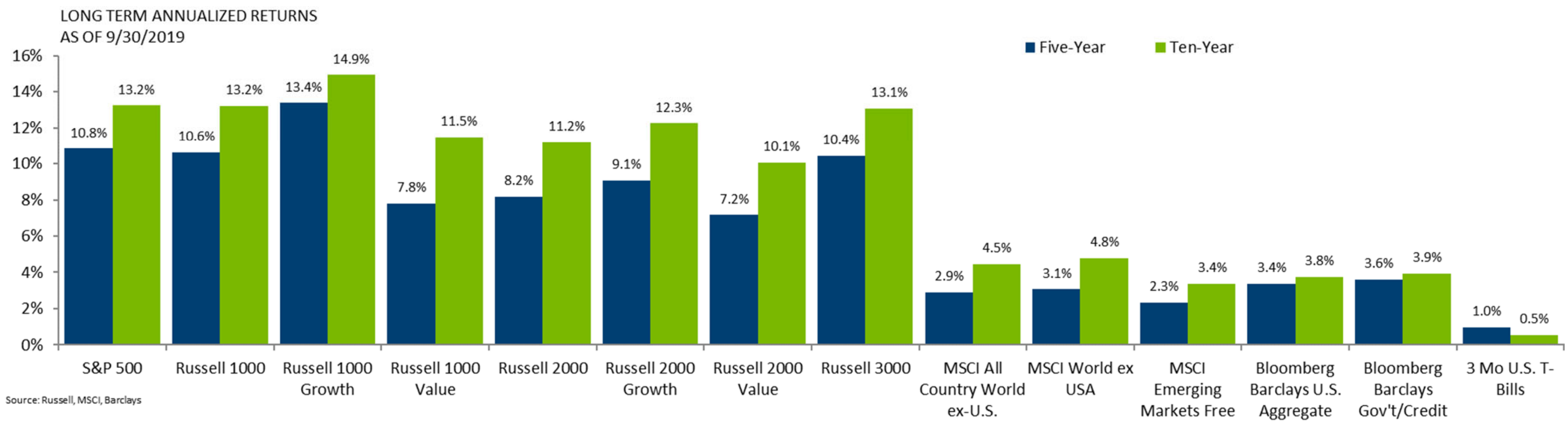
Third Quarter 2019

Aon

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

Market Highlights





Market Highlights

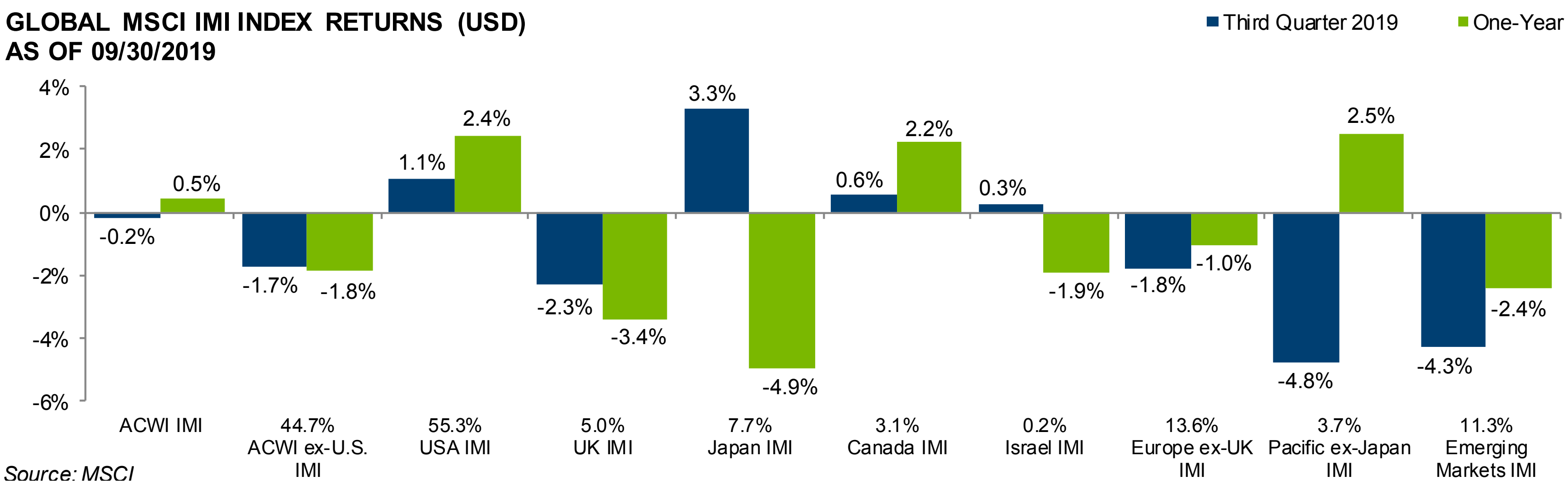
Returns of the Major Capital Markets

Periods Ending 9/30/2019

	Third Quarter	1-Year	3-Year[1]	5-Year[1]	10-Year[1]
Domestic Equity					
S&P 500	1.7%	4.3%	13.4%	10.8%	13.2%
Russell 1000	1.4%	3.9%	13.2%	10.6%	13.2%
Russell 1000 Growth	1.5%	3.7%	16.9%	13.4%	14.9%
Russell 1000 Value	1.4%	4.0%	9.4%	7.8%	11.5%
Russell 2000	-2.4%	-8.9%	8.2%	8.2%	11.2%
Russell 2000 Growth	-4.2%	-9.6%	9.8%	9.1%	12.3%
Russell 2000 Value	-0.6%	-8.2%	6.5%	7.2%	10.1%
Russell 3000	1.2%	2.9%	12.8%	10.4%	13.1%
International Equity					
MSCI All Country World ex-U.S.	-1.8%	-1.2%	6.3%	2.9%	4.5%
MSCI World ex USA	-0.9%	-1.0%	6.5%	3.1%	4.8%
MSCI Emerging Markets Free	-4.3%	-2.0%	6.0%	2.3%	3.4%
Fixed Income					
Bloomberg Barclays U.S. Aggregate	2.3%	10.3%	2.9%	3.4%	3.8%
Bloomberg Barclays Gov't/Credit	2.6%	11.3%	3.2%	3.6%	3.9%
3 Mo U.S. T-Bills	0.6%	2.4%	1.5%	1.0%	0.5%
Inflation					
CPI-U	0.4%	1.7%	2.1%	1.5%	1.7%

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

Global Equity Markets

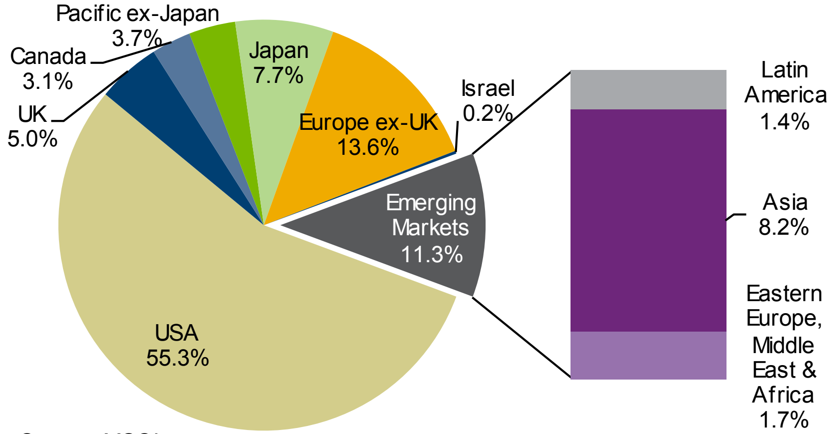


Source: MSCI

- Concerns of slowing global growth and trade wars ramped up significantly over the quarter before giving way to monetary stimulus that helped to bolster stocks. In local currency terms, the MSCI AC World Investable Market Index returned 1.1% but due to U.S. dollar appreciation, global equities returned -0.2% in USD terms.
- Japanese stocks were the strongest performers (3.3%) where significant multiple expansion saw cyclical sectors, such as the Consumer Discretionary sector, outperform strongly.
- Pacific ex-Japan was the worst performer with a return of -4.8%, significantly dragged down by double-digit decline in Hong Kong equity returns due to slowdown in China and heightened political unrest with growing protests triggered by a controversial extradition bill.
- Emerging Markets (EM) equities fell sharply at -4.3% as impact of trade concerns continues to be a strong headwind. In particular, a double-digit decline in Chinese stocks detracted from EM returns as both the rhetoric and size of tariffs increased. Much of the fall can be attributed however to the strong appreciation of the U.S. dollar with the MSCI EM IMI down by 1.9% in local currency terms.

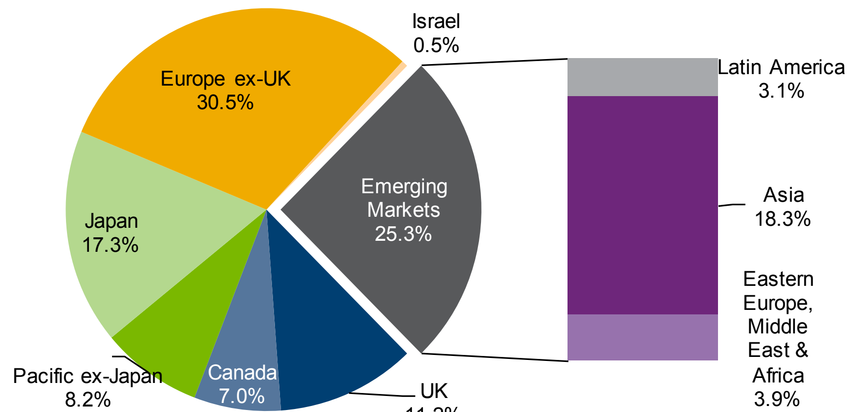
Global Equity Markets

MSCI ALL COUNTRY WORLD IMI INDEX GEOGRAPHIC ALLOCATION AS OF 09/30/2019



Source: MSCI

MSCI ALL COUNTRY WORLD EX-U.S. IMI INDEX GEOGRAPHIC ALLOCATION AS OF 09/30/2019

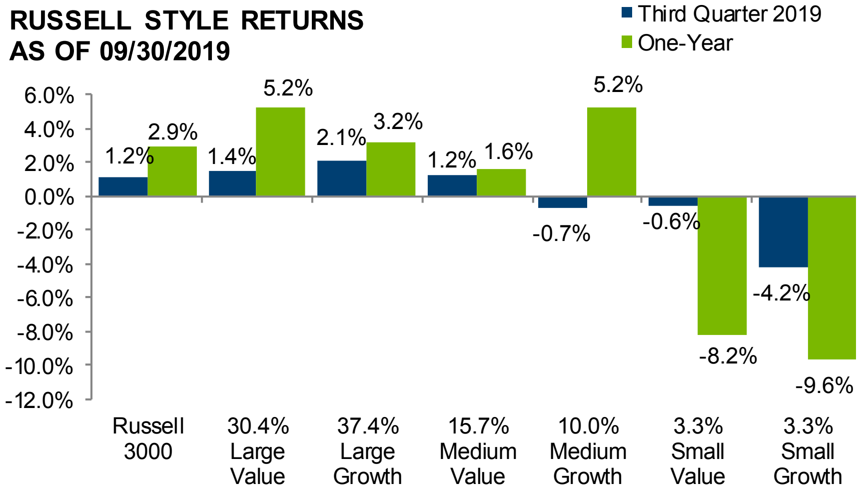


Source: MSCI

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

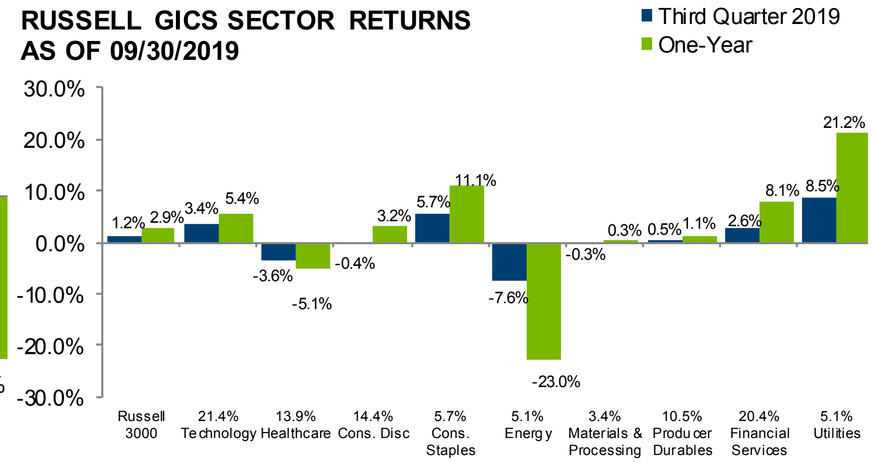
U.S. Equity Markets

RUSSELL STYLE RETURNS
AS OF 09/30/2019



Source: Russell Indexes

RUSSELL GICS SECTOR RETURNS
AS OF 09/30/2019

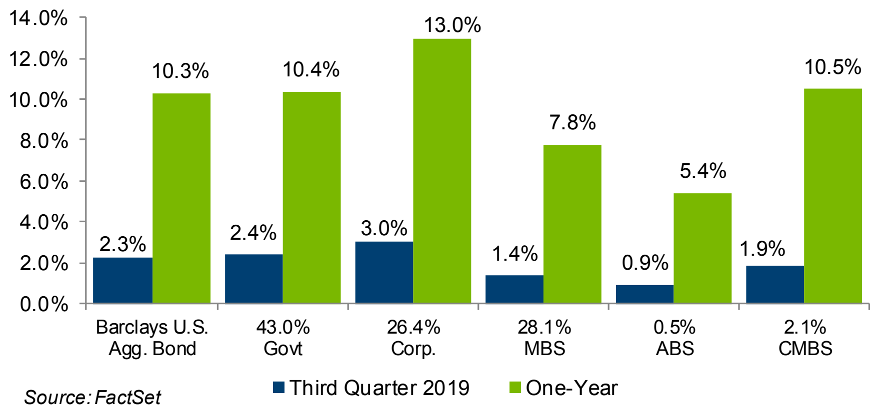


Source: Russell Indexes

- With expectations of corporate earnings turning lower, the positive return for U.S. equities was primarily driven by multiple expansion. In general, less economically-sensitive sectors outperformed which is not too surprising given the deteriorating outlook. The Russell 3000 Index rose 1.2% during the third quarter and 2.9% over the one-year period. Relative to their international peers, U.S. stocks broadly outperformed with particularly resilience from the Financials sector.
- Energy (-7.6%) and Healthcare (-3.6%) were the worst performers over the quarter. The former was affected by lower crude oil prices, while the latter despite its more defensive nature underperformed due to political headwinds. Meanwhile, Utilities (8.5%) and Consumer Staples (5.7%) were the best performing sectors in Q3 2019.
- Performance was mixed across the market capitalization spectrum over the quarter. In general, small cap stocks underperformed both large and medium cap stocks over the quarter. Small-cap stocks underperformed on a fairly broad basis, rather than any meaningful differences in sector allocations although the near double-digit decline in small-cap Health Care stocks was notable. Growth stocks generally underperformed their Value counterparts in Q3 2019 and over the last year.

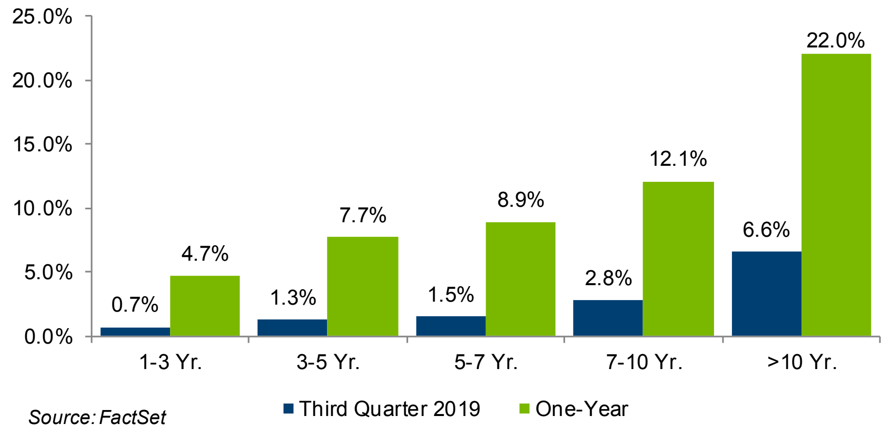
U.S. Fixed Income Markets

BLOOMBERG BARCLAYS AGGREGATE RETURNS BY SECTOR AS OF 09/30/2019



Source: FactSet

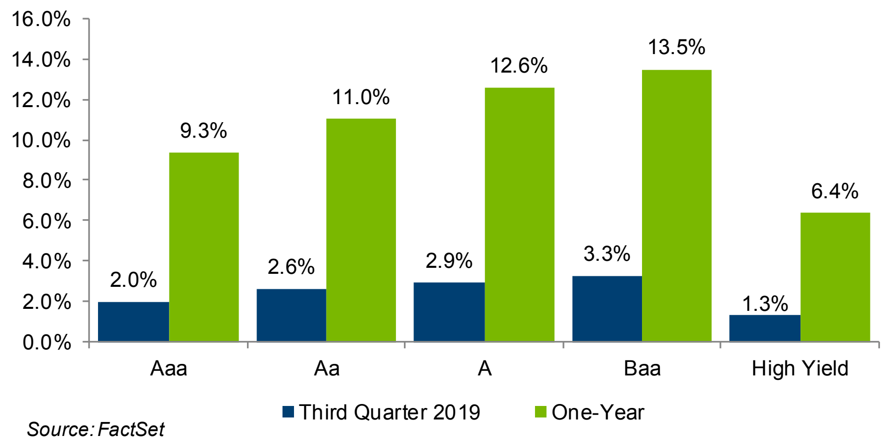
BLOOMBERG BARCLAYS AGGREGATE RETURNS BY MATURITY AS OF 09/30/2019



Source: FactSet

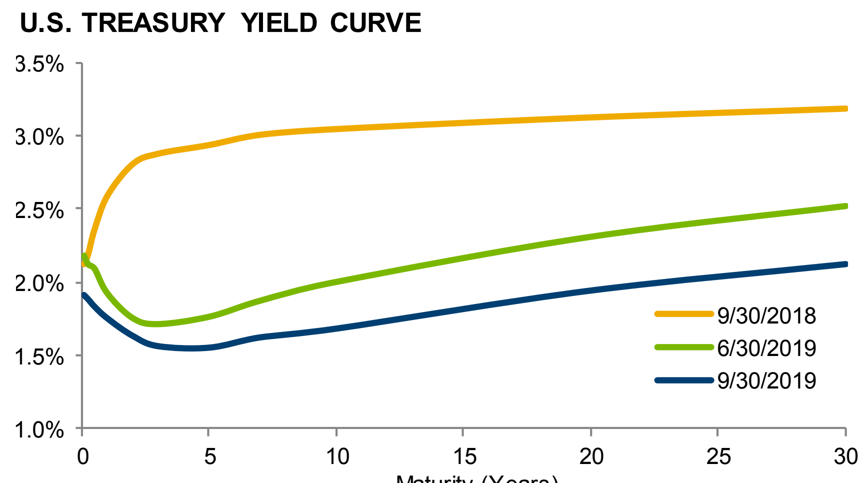
- The Bloomberg Barclays U.S. Aggregate Bond Index rose by 2.3% over the quarter. Corporate bonds were the best performers, returning 3.0%. Securitized debt underperformed other areas of the U.S. bond market with lower duration of the segment attributed to the more modest returns with a return of 0.9%.
- Strong underlying government bond returns supported corporate bonds returns across all credit grades. Within investment grade bonds, Baa bonds rose the most at 3.3%. High Yield bonds returned 1.3% with minimal movement in spreads over the quarter.
- As the U.S. yield curve flattened over the quarter, long-maturity bonds outperformed intermediate and short-maturity bonds. Long-maturity bonds returned 6.6% while short-maturity bonds returned only 0.7%.

BLOOMBERG BARCLAYS AGGREGATE RETURNS BY QUALITY AND HIGH YIELD RETURNS AS OF 09/30/2019

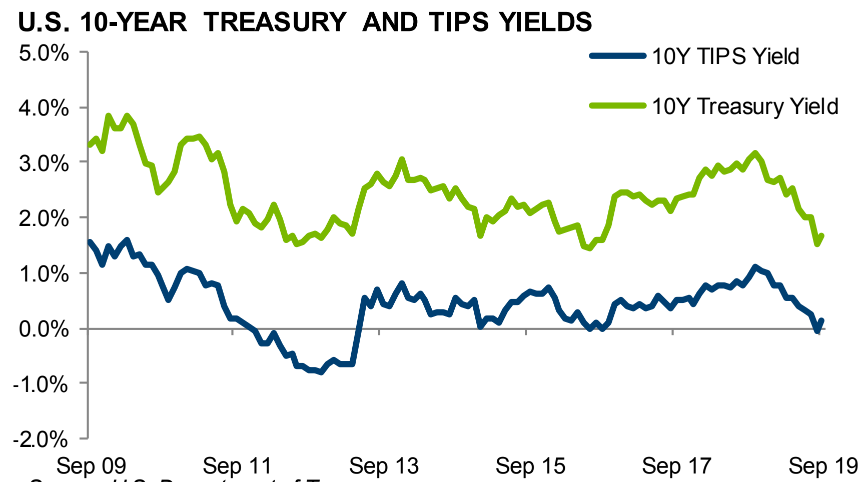


Source: FactSet

U.S. Fixed Income Markets



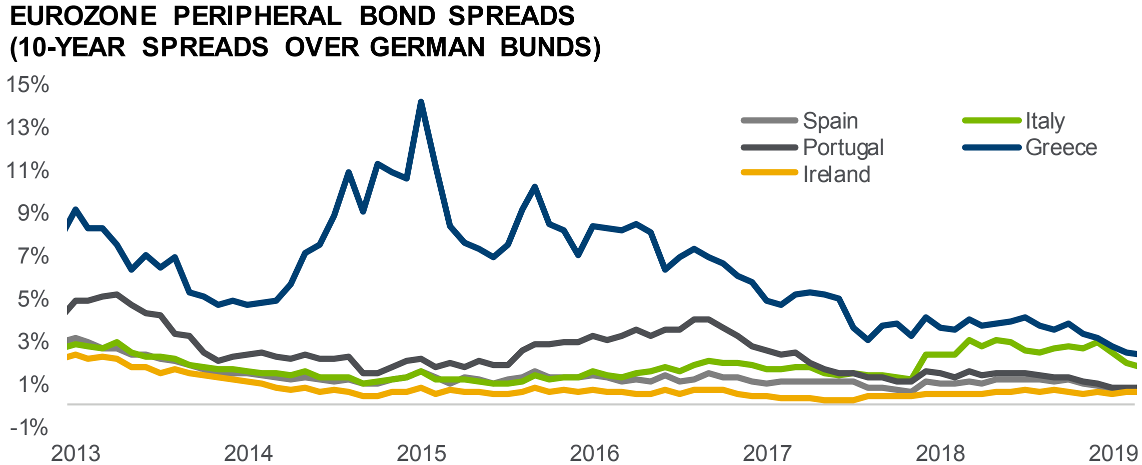
Source: U.S. Department of Treasury



Source: U.S. Department of Treasury

- The U.S. nominal yields fell across all maturities with the yield curve flattening over the quarter as longer-term yields decreased by more than short-term yields. Over the quarter, the widely watched spread between 10 and 2-year U.S. Treasury yields briefly fell into negative territory for the first time since 2007, a concerning development as a recession has followed every yield curve inversion since the 1960s.
- The 10-year U.S. Treasury yield ended the quarter at 1.68%, 32bps lower than at the start of the quarter in which the U.S. Federal Reserve (Fed) twice cut the interest rate by 25bps each to 1.75%-2.00%. Despite the two rate cuts, the Fed made it clear that it was not the beginning of a sustained easing cycle. This more conservative messaging was maintained at the September Fed meeting although the Federal Open Market Committee (FOMC) appeared to be divided on the future direction of rates with a member arguing for more aggressive cuts to be made.
- The weaker economic outlook was reflected in the downward movements in TIPS yields by 16bps over the quarter and ended the period at 0.15%, while lower inflation expectations led breakeven inflation lower by 16bps to 1.54%.

European Fixed Income Markets



Source: FactSet

- European government bond spreads over 10-year German bunds generally fell across the Euro Area with the exception of Spanish and Irish government bonds. The European Central Bank (ECB) cut its deposit rate by 10bps to -0.5% and announced that its bond purchasing program will be restarted with the purchase of €20billion of bonds each month from November 2019. Furthermore, the ECB indicated that this policy would not be time limited but will be in place until their inflation target is reached.
- German government bond yields fell by 27bps to -0.58% over the quarter after the country's manufacturing sector dived deeper into contraction territory. Meanwhile, the 30-year German bund yield turned negative for the first time in history. Italian government bond yields fell by 129bps to a record low of 0.81% over the quarter as political uncertainty eased after a new coalition government was formally agreed.
- Greek government bond yields fell by 109bps over the quarter to a record low of 1.34%. Greece submitted a request to repay part of its expensive loans from the International Monetary Fund (IMF) early.

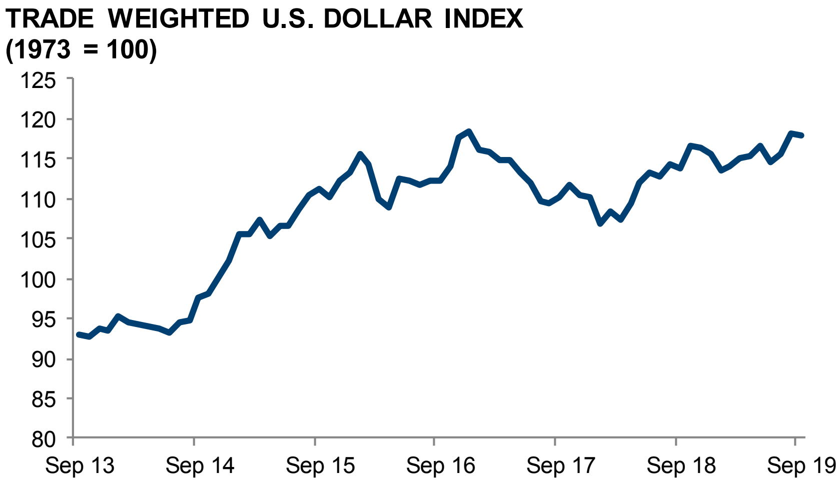
Credit Spreads

Spread (bps)	9/30/2019	6/30/2019	6/30/2018	Quarterly Change (bps)	1-Year Change (bps)
U.S. Aggregate	46	46	39	0	7
Gov't	0	0	0	0	0
Credit	109	109	100	0	9
Gov't/Credit	46	46	43	0	3
MBS	46	46	28	0	18
CMBS	70	69	60	1	10
ABS	37	41	38	-4	-1
Corporate	115	115	106	0	9
High Yield	373	377	316	-4	57
Global Emerging Market	312	282	273	30	39

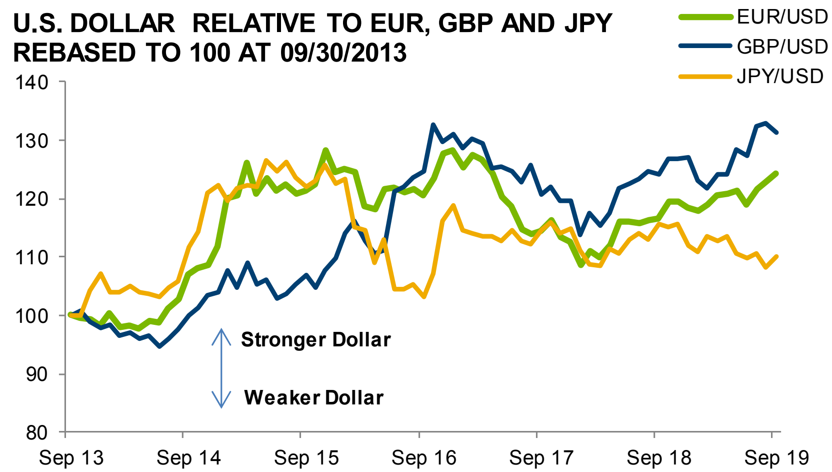
Source: Barclays Live

- Movements in credit spreads over U.S. Treasuries were mixed over the quarter. There were fairly muted movements in U.S. credit with modest narrowing in U.S. high yield spreads while U.S. corporate spreads were unchanged.
- Emerging market bond spreads widened significantly by 30bps over the quarter. The ongoing trade war, U.S. dollar debt vulnerabilities among certain EM countries given the increase in the 'greenback' and less risk appetite weighed on emerging market debt in general.

Currency



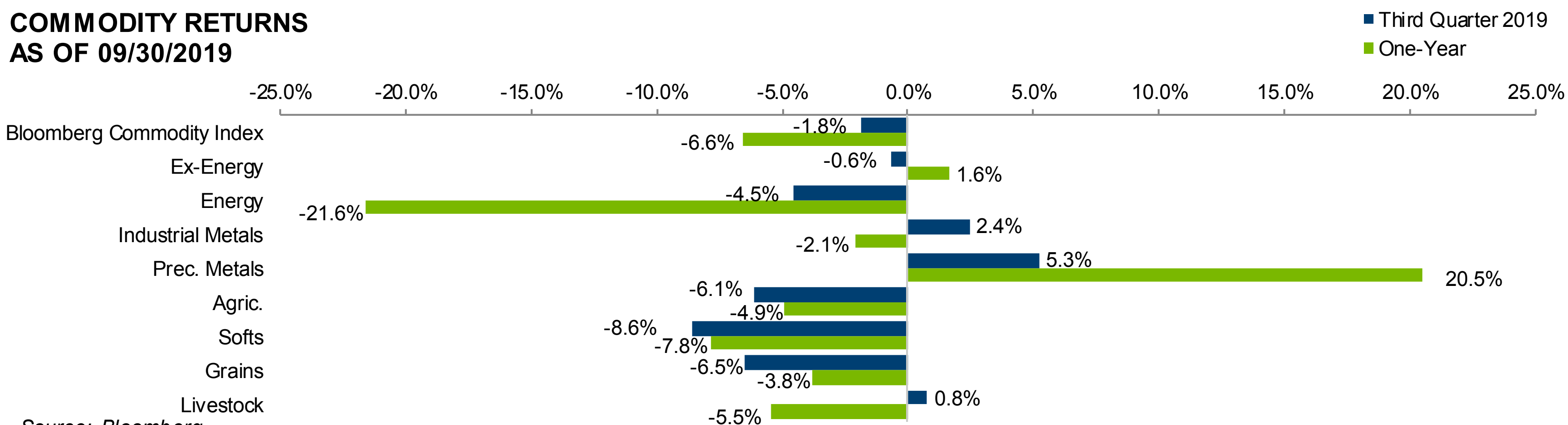
Source: Federal Reserve



Source: FactSet

- The U.S. dollar continued on an upward trend with economic releases surprising to the upside in the U.S. and cyclical supports – a wide interest rate differential and relative economic strength – remaining intact. The U.S. dollar strengthened against major currencies over the quarter, rising by 2.8% on a trade-weighted basis over the quarter, supported by appreciation against sterling and the euro, up 3.3% and 4.5% respectively. The U.S. dollar appreciated less against the Japanese yen which benefited from some safe haven flows during bouts of market volatility over the quarter.
- Once again, closely tied to Brexit developments, sterling slipped by just 0.1% on a trade weighted basis but fell by considerably more to a post-EU referendum low against the U.S. dollar. Sterling depreciated by 3.2% against the U.S. dollar.
- The euro was weak over the quarter as economic releases disappointed with data pointing to near-recessionary conditions in the bloc. With the region exposed to global economic activity, the ongoing trade war and decelerating growth weighed on the region and the currency. Further headwinds pushed the euro lower later in the quarter as the ECB eased monetary policy and lowered interest rates. Against this backdrop, the euro slid by c.4% against the U.S. dollar.

Commodities

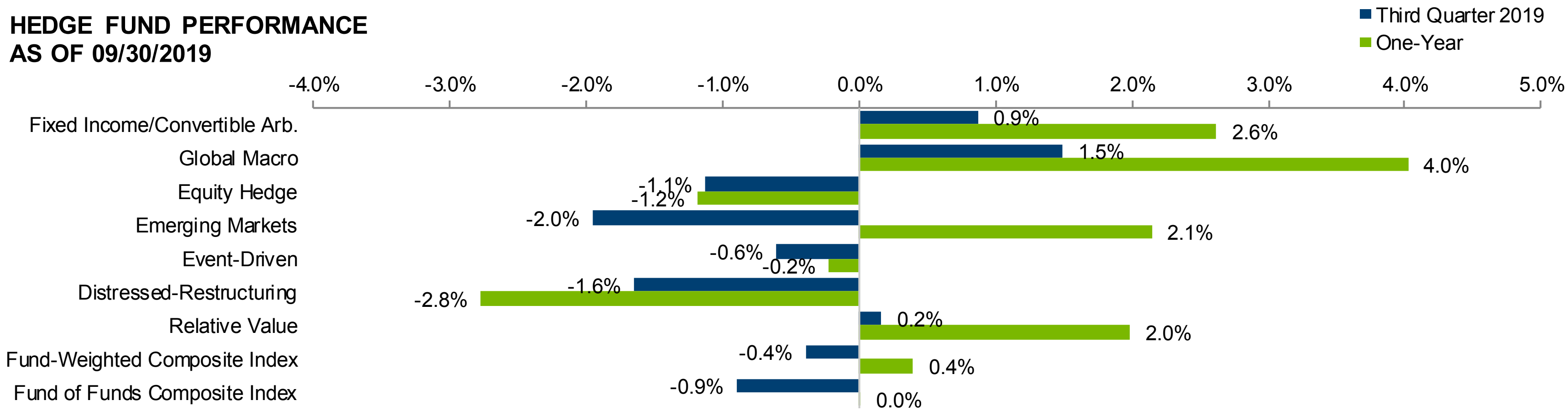


Source: Bloomberg
Note: Softs and Grains are part of the wider Agriculture sector

- Commodities fell over the quarter which saw the Bloomberg Commodity Index return -1.8%.
- Despite ongoing supply risks, exacerbated by the drone attacks on oil infrastructure in Saudi Arabia that accounts for nearly half of the Kingdom's production, crude oil prices ended the quarter lower. Weaker energy demand led to lower crude oil prices: the price of Brent crude oil fell by 8.7% to $61/bbl while WTI crude oil spot price fell by 7.5% to $54/bbl. Energy sector disappointed with a return of -4.5%.
- Supported partly by safe-haven buying over the quarter, Precious Metals was the best performing sector over the quarter with a return of 5.3%. This took the one-year return to over 20%. All other commodity sectors posted negative returns over the same period.
- Agriculture (-6.1%) was the worst performing sector in Q3 2019. Within the Agriculture sector, Softs fell by 8.6% whilst Grains fell by 6.5%.

Hedge Fund Markets Overview

HEDGE FUND PERFORMANCE
AS OF 09/30/2019

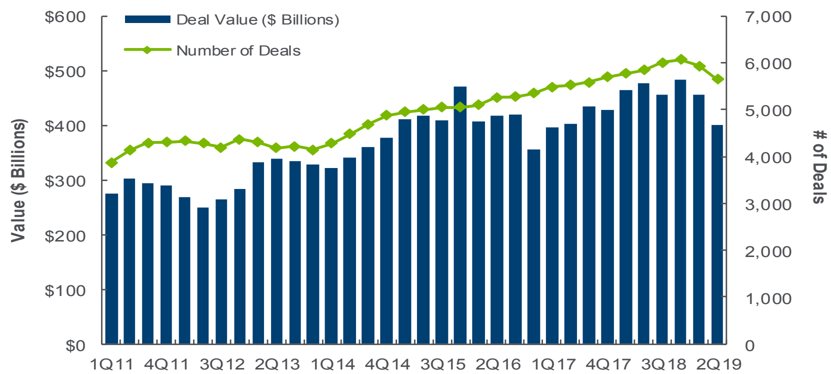


Note: Latest 5 months of HFR data are estimated by HFR and may change in the future.
Source: HFR

- Hedge fund performance was mixed across all strategies in the third quarter.
- Over the quarter, Global Macro hedge fund strategies were the best performers with a return of 1.5%. Most of the outperformance occurred over August when market risks were elevated. Conversely, Emerging Markets and Distressed-Restructuring were the worst performers, returning -2.0% and -1.6% respectively.
- The HFRI Fund-Weighted Composite Index and the HFRI Fund of Funds Composite Index produced returns of -0.4% and -0.9%, respectively.

Private Equity Market Overview – Q2 2019

LTM Global Private Equity-Backed Buyout Deal Volume

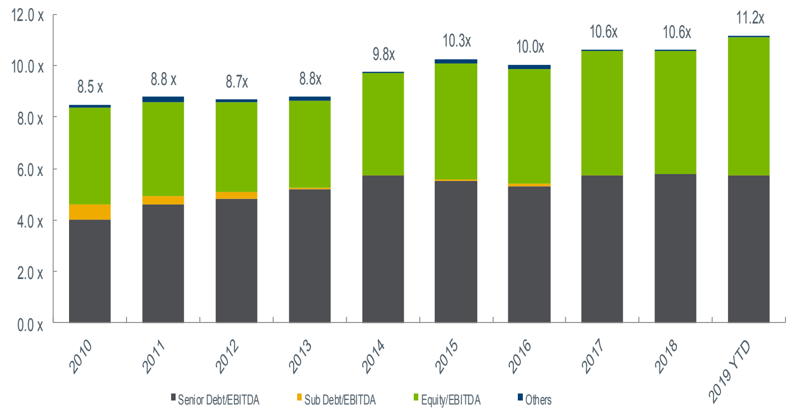


Source: Preqin

- **Fundraising:** In Q2 2019, $178.1 billion was raised by 366 funds, which was an increase of 25.8% on a capital basis and an increase of 0.3% by number of funds over the prior quarter. Dry powder stood at nearly $2.0 trillion at the end of the quarter, a modest increase compared to the previous quarter.[1]
- **Buyout:** Global private equity-backed buyout deals totaled $77.7 billion in Q2 2019, which was up 6.8% on a number of deals basis and down 27.0% on a capital basis from Q1 2019.[1] Through the end of Q2 2019, the average purchase price multiple for all U.S. LBOs was 11.2x EBITDA, an increase of 0.6x over year-end 2018 and up from the five-year average (10.2x).[2] Large cap purchase price multiples stood at 11.0x, up compared to the full-year 2018 level of 10.6x.[2] The weighted average purchase price multiple across all European transaction sizes averaged 11.1x EBITDA for Q2 2019, up from the 10.9x multiple seen at the end of Q1 2019. Purchase prices for transactions of €1.0 billion remained at 11.3x at the end of Q2 2019, a drop from the 11.7x seen at year-end 2018. Transactions between €500.0 million and €1.0 billion were down 0.3x from the end of 2018, and stood at 11.0x at the end of the quarter.[2] Globally, exit value totaled $104.7 billion from 453 deals during the second quarter, significantly higher than the $40.8 billion in exits from 460 deals during Q1 2019.[1]
- **Venture:** During the second quarter, 1,409 venture-backed transactions totaling $28.7 billion were completed in the U.S., which was an increase on a capital and deal basis over the prior quarter's total of $26.1 billion across 1,362 deals. This was 41.4% higher than the five-year quarterly average of $20.3 billion.[3] Total U.S. venture-backed exit activity totaled approximately $138.3 billion across 198 completed transactions in Q2 2019, up slightly on a capital basis from the $50.1 billion across 185 exits in Q1 2019.[4]
- **Mezzanine:** Four funds closed on $1.2 billion during the second quarter. This was an increase from the prior quarter's total of $1.0 billion raised by three funds, but represented a decrease of 76.7% from the five-year quarterly average of $5.1 billion. Estimated dry powder was $51.5 billion at the end of Q2 2019, down from the $58.8 billion seen at the end of Q1 2019.[1]

Private Equity Market Overview – Q2 2019

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



Source: S&P

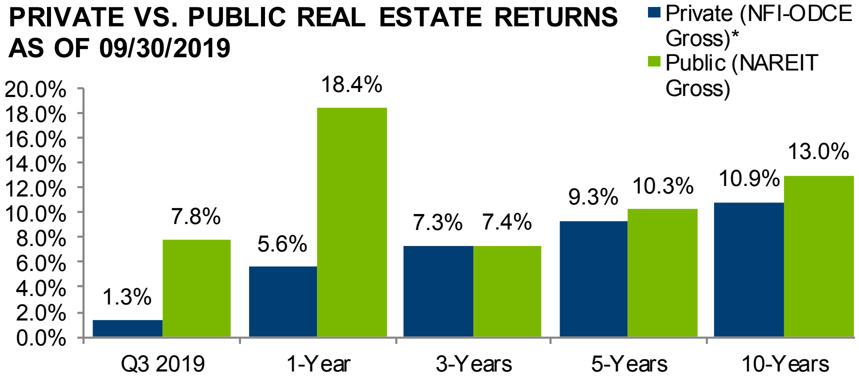
- **Distressed Debt:** The LTM U.S. high-yield default rate was 1.9% as of July 2019, which was down from year-end 2018's LTM rate of 2.4%.[5] During the quarter, $15.3 billion was raised by 15 funds, higher than both the $5.0 billion raised by 14 funds in Q1 2019 and the five-year quarterly average of $11.0 billion.[1] Dry powder was estimated at $119.4 billion at the end of Q2 2019, which was up slightly from the $118.0 billion seen at the end of Q1 2019. This remained above the five-year annual average level of $103.3 billion.[1]
- **Secondaries:** Four funds raised $1.5 billion during the quarter, down from the $2.2 billion raised by nine funds in Q1 2019 and the $9.0 billion raised by ten funds in Q4 2018.[1] At the end of Q2 2019, there were an estimated 58 secondary and direct secondary funds in market targeting roughly $74.6 billion.[1] The average discount rate for all private equity sectors finished the quarter at 9.2%, lower than the 9.5% discount at the end of Q1 2019.[6]
- **Infrastructure:** $23.1 billion of capital was raised by 29 funds in Q2 2019 compared to $18.3 billion of capital raised by 21 partnerships in Q1 2019. At the end of the quarter, dry powder stood at an estimated $217.0 billion, up significantly from Q1 2019's total of $175.0 billion. Infrastructure managers completed 582 deals with an estimated aggregate deal value of $155.0 billion in Q2 2019 compared to 552 deals totaling $63.0 billion a quarter ago.[1]
- **Natural Resources:** During Q2 2019, two funds closed on $0.4 billion compared to five funds totaling $1.5 billion in Q1 2019. Energy and utilities industry managers completed approximately 80 deals totaling an estimated $12.4 billion through Q2 2019, which represents 36.1% of the full year capital deployment in 2018.[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.

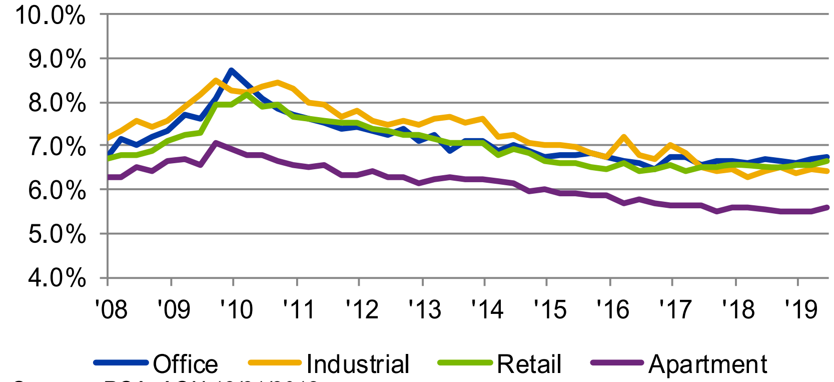
U.S. Commercial Real Estate Markets

PRIVATE VS. PUBLIC REAL ESTATE RETURNS AS OF 09/30/2019



*Third quarter returns are preliminary
Sources: NCREIF, FactSet

CAP RATES BY SECTOR



Sources: RCA, AON 12/31/2018

- U.S. Core Real Estate returned 1.3%* over the third quarter, equating to a 5.6% 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. Going forward, income and income growth are expected to be the larger drivers of return, given the current point of the real estate cycle.
- Global property markets, as measured by the FTSE EPRA/NAREIT Developed Real Estate Index, returned 4.9% (USD) in aggregate during the third quarter. The sector benefitted from increasingly accommodative monetary policy. REIT market performance was driven by North America (7.6% USD) and Europe (3.3% USD). The U.S. REIT markets (FTSE NAREIT Equity REITs Index) gained 7.8% in the third quarter. Central bank easing proved to be supportive of REIT pricing.
- According to RCA through August 2019, the U.S. property market has experienced price growth of 6.7% year-over-year across major sectors. The industrial sector pricing appreciated 12.5% year-over-year, leading all sectors. Furthermore, transaction volume was up 10% over the same period.
- Return expectations have normalized, with go forward expectations in line with historical norms. The market benefited from two rate cuts during the Quarter, from the Federal Reserve, and declining interest rates have led to a rally across various asset classes. According to Preqin, there remains a record amount of dry powder ($334 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

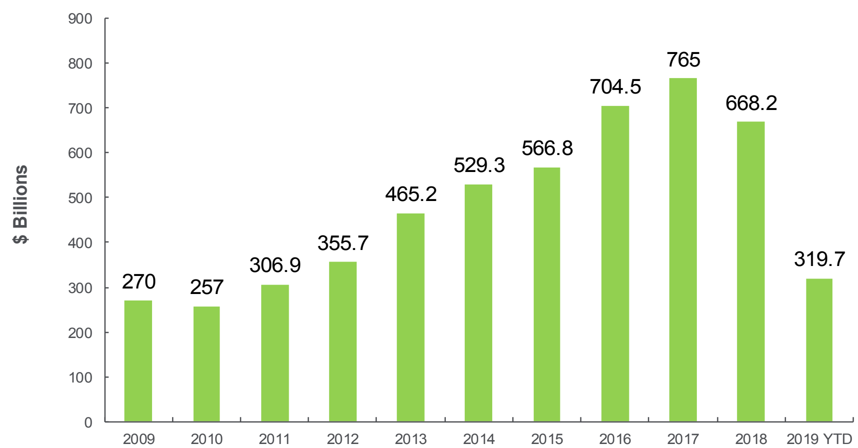
(This page left blank intentionally)

Appendix A:

Global Private Equity Market Overview
2Q 2019

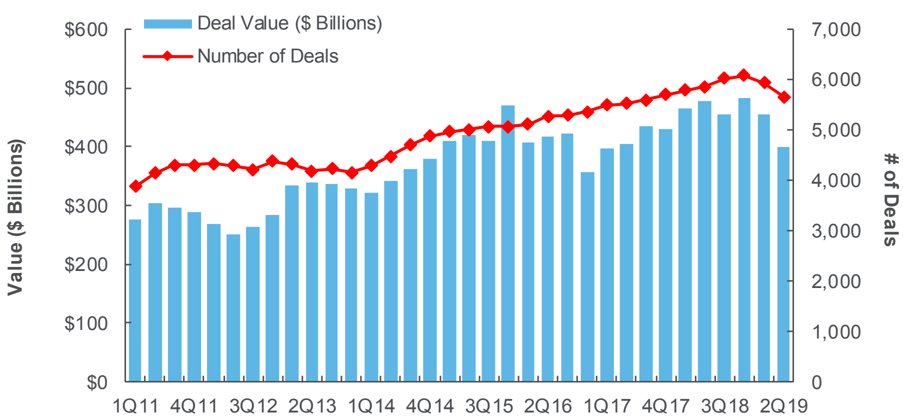
Private Equity Overview

Total Funds Raised



Source: Preqin

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

Fundraising

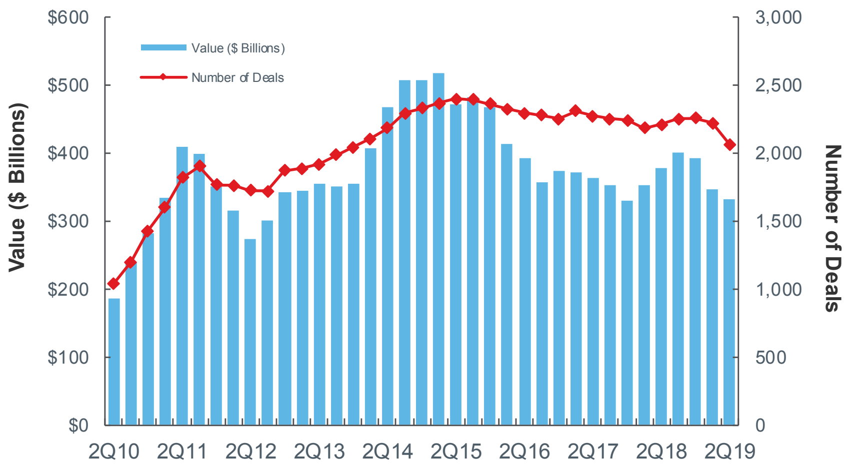
- In 2Q 2019, $178.1 billion was raised by 366 funds, which was an increase of 25.8% on a capital basis and an increase of 0.3% by number of funds from the prior quarter.[1]
  - 2Q 2019 fundraising was 13.3% higher on a capital basis than 2Q 2018.
  - Relative to the five-year quarterly average, the number of funds raised decreased by 32.7% while the total capital raised increased by 8.2%, strengthening the observation that larger amounts of capital are being raised by fewer funds.
  - The majority of 2Q 2019 capital was raised by funds with target geographies in North America, comprising 59.7% of the quarterly total. Capital targeted for Europe made up 25.5% of the total funds raised during the quarter, while the remainder was attributable to managers targeting Asia and other parts of the world.
- Dry powder stood at nearly $2.0 trillion at the end of the quarter, a modest increase compared to the previous quarter.[1]

Activity

- In 2Q 2019, 1,305 deals were completed for an aggregate deal value of $77.7 billion as compared to 1,264 transactions totaling $106.4 billion in 1Q 2019.[1]
  - This was 26.6% lower than the five-year quarterly average deal volume of $105.8 billion.
- European LBO transaction volume totaled €7.4 billion in 2Q 2019, representing roughly 29.7% of 2018's total LBO loan volume.[3]
- At the end of 2Q 2019, the average purchase price multiple for all U.S. LBOs was 11.2x EBITDA, up compared to the year-end 2018 (10.6x) and up from the five-year average (10.2x). Large corporate purchase price multiples stood at 11.0x through 2Q 2019, up from with the 10.6x observed at year-end 2018.[3]
  - For all U.S. LBOs, this quarter was 1.1x and 2.0x turns (multiple of EBITDA) above the five and ten-year average levels, respectively.
- European multiples for transactions greater than €1.0 billion averaged 11.3x in the second quarter, equal to that witnessed in the first quarter. Transactions greater than €500.0 million saw a slight increase of 0.1x in purchase multiples and ended the quarter at 11.0x. [3]
- Debt remained broadly available in the U.S.
  - U.S. average leverage levels in 2Q 2019 were 5.7x compared to the five and ten-year averages of 5.7x and 5.2x, respectively.[3]
  - The amount of debt issued supporting new transactions increased compared to year-end 2018 from 68.2% to 72.2%, which is also higher than the 61.7% average level over the prior five years.[3]
- In Europe, average senior debt/EBITDA through 2Q 2019 was 5.6x, up from the 4.7x observed year-end 2018. This was also up over the five-year average of 5.1x and ten-year average level of 4.5x.

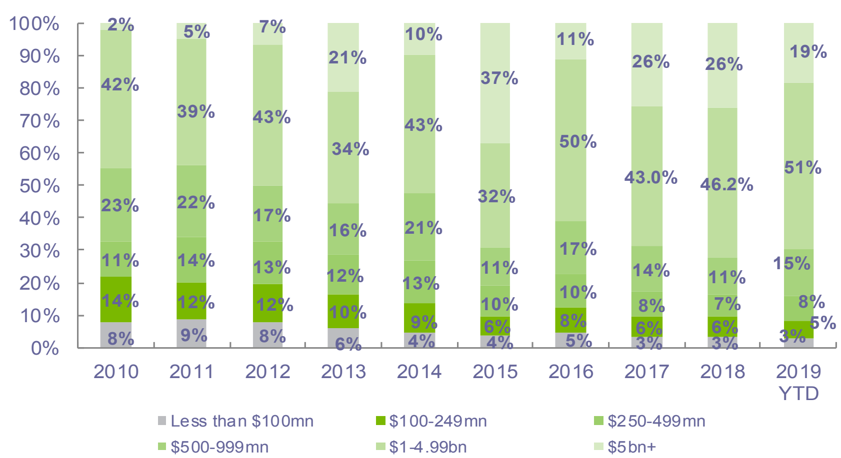
Buyouts / Corporate Finance

LTM PE Exit Volume and Value



Source: Preqin

M&A Deal Value by Deal Size



Source: Preqin

Fundraising

- $103.8 billion was closed on by 89 buyout and growth funds in 2Q 2019, compared to $64.4 billion raised by 111 funds in 2Q 2018.[1]
  - This was higher than the five-year quarterly average of $83.1 billion.
  - Advent Global Private Equity IX was the largest fund raised, closing on $17.5 billion.[1]
- Buyout and growth equity dry powder was estimated at $948.2 billion, which surpassed the $930.5 billion observed at the end of 1Q 2019. This was substantially higher than the five-year average level of $675.5 billion.[1]
  - Aside from mega funds, which increased 5.1% quarter-over-quarter, buyout dry powder decreased across all fund size categories in 2Q 2019. Middle-market fund dry powder exhibited the largest decrease during the quarter (2.1%), and is now estimated at $123.8 billion. Large and small market buyout dry powder finished the quarter down 1.3% and 0.4%, respectively, from 1Q 2019.[1]
  - An estimated 58.8% of buyout dry powder was targeted for North America, while European dry powder comprised 26.4% of the total.[1]

Activity

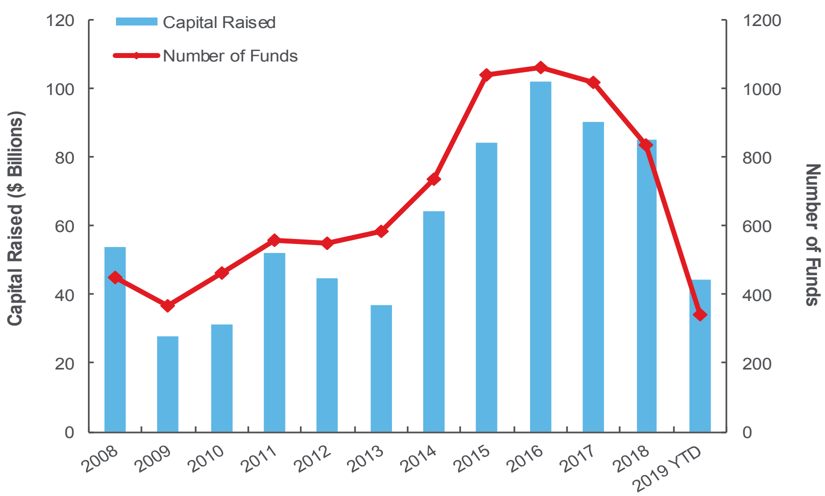
- Global private equity-backed buyout deals totaled $77.7 billion in 2Q 2019, which was a decrease of 27.0% and 26.6% from 1Q 2019 and the five-year quarterly average, respectively.[1]
  - 1,350 deals were completed during 2Q 2019, which was up 6.8% from 1Q 2019 and down 1.1% compared to the five-year quarterly average.
  - In 2Q 2019, deals valued at $1-4.99 billion accounted for an estimated 60.1% of total deal value during the quarter compared to 46.2% in 2018 and 43.0% in 2017.[1]
- Entry multiples for all transaction sizes in 2Q 2019 stood at 11.3x EBITDA, up from 2018's level (10.6x).[3]
  - Large corporate purchase price multiples stood at 10.8x during the quarter, up from the 10.6x observed at year-end 2018.[3]
  - The weighted average purchase price multiple across all European transaction sizes averaged 11.1x EBITDA in 2Q 2019, down from the 11.3x seen at year-end 2018. Purchase prices for transactions of €1.0 billion or more remained at 11.3x during the quarter.
  - Transactions greater that €500.0 million were up 0.1x from 1Q 2019, and stood at 11.0x.[3]
  - The portion of average purchase prices financed by equity for all deals was 42.2% in 2Q 2019, up from 40.1% in 2018. This remained above the five and ten-year average levels of 39.9% and 39.8%, respectively.[3]
- Globally, exit value totaled $104.7 billion from 453 deals in 2Q 2019 compared to $40.8 billion for 460 deals in 1Q 2019 and $119.4 billion across 610 deals in Q2 2018.[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

- $22.1 billion of capital closed in 2Q 2019,up from the prior quarter total of $20.1 billion but down from the Q2 2018 total of $26.7 billion.[1]
  - 154 funds closed during the quarter, down 5.5% and 33.4% from the prior quarter and five year quarterly average, respectively.[1]
  - Andreessen Horowitz LSV Fund I was the largest fund raised during the quarter, closing on $2.2 billion.[16]
- The average fund size raised during the quarter was approximately $153.0 million, which was less than both the prior quarter of $154.0 million but higher than the five year quarterly average of $117.9 million.[1]
- Dry powder was estimated at $255.0 billion at the end of 2Q 2019, which was up from 1Q 2019's total of $239.9 billion. This was 54.7% higher than the five year average. An estimated 45.7% of dry powder was targeted for North America, followed by approximately 37.7% earmarked for Asia.[1]

Activity

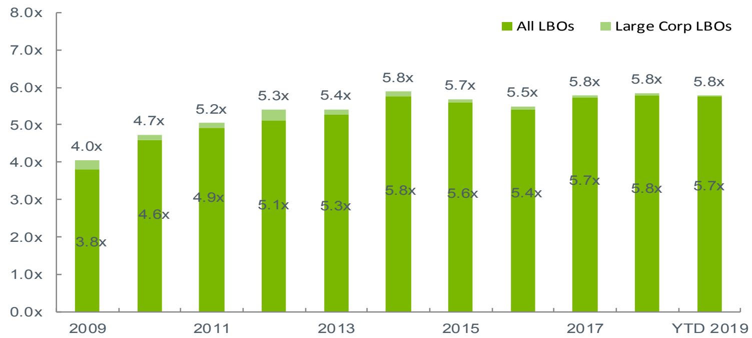
- During the second quarter, 1,409 venture-backed transactions totaling $28.7 billion were completed in the U.S., which was an increase on a capital and deal basis over the prior quarter's total of $26.1 billion across 1,362 deals. This was 41.4% higher than the five-year quarterly average of $20.3 billion. This was the second strongest quarter on a capital investment basis since Q2 2017 and marks the eighth consecutive quarter of $20.0 billion or more invested into venture-backed companies.[7]
  - The number of unicorns in the U.S., or companies with valuations of $1.0 billion or more, increased by 19 in 2Q 2019.[7]
- Median pre-money valuations increased across all deal stages except Series D during Q2. Seed, Series A, and Series B increased by 22.5%, 24.0%, and 16.5%, respectively, to valuations of $9.8 million, $24.8 million, and $75.0 million, respectively. Series C pre-money valuations increased by 21.9% quarter-over-quarter, ending at $195.0 million. Series D+ deal valuations, however, were down significantly by 39.6% quarter-over-quarter and are currently valued at $305.0 million.[9]
- Total U.S. venture backed exit activity totaled $138.3 billion across 198 completed transactions in 2Q 2019, up significantly on a capital basis from $50.1 billion in 1Q 2019.[8]
  - There were 34 venture-backed initial public offerings during the quarter, which was significantly higher than the 14 completed in 1Q 2019.[8]
  - The number of M&A transactions totaled 163 deals in 2Q 2019, barely up from 162 deals in Q1 2019.[7]

Opportunity

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

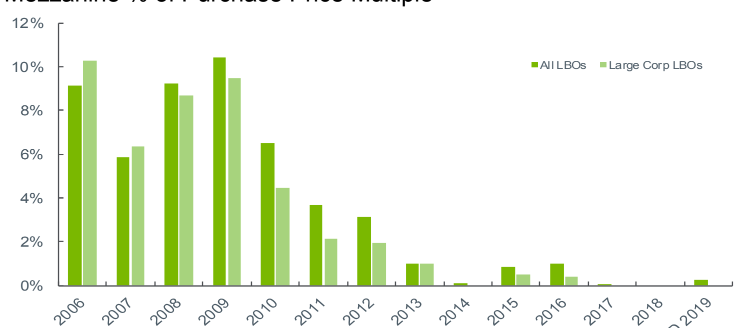
Leveraged Loans & Mezzanine

Average Leverage by Deal Size



Debt Issuance ($ Billions)

Mezzanine % of Purchase Price Multiple



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

Leveraged Loans

Fundraising

- New CLO issuance totaled $63.7 billion through 2Q 2019, up $34.6 billion from 1Q 2019.[2]
- High-yield debt issuance totaled $71.7 billion in 2Q 2019, up from $60.5 billion issued in 1Q 2019.[2]
- Leveraged loan mutual fund net flows ended 2Q 2019 with a net outflow of $17.6 billion, compared to a net outflow of $10.1 billion through 1Q 2019.[2]

Activity

- Leverage for all LBO transactions ended the quarter at 5.7x, down slightly from 2018's level of 5.8x. Leverage continues to be comprised almost entirely of senior debt. The average leverage level for large cap LBOs was 5.8x during the quarter, up 0.1x from 1Q 2019.[3]
- YTD institutional new leveraged loan issuances totaled $146.9 billion through 2Q 2019, down significantly from the $270.4 billion issued during the same period in 2018.[2]
- 72.2% of new leveraged loans were used to support M&A and growth activity in 2Q 2019, down from 80.4% in 1Q 2019. This was above the prior five-year average of 61.7%.[3]
- European leveraged loan issuance decreased by 20.6% quarter-over-quarter to €12.0 billion, which was 35.4% of 2018's total sponsored loan volume.[3]
- High yield YTWs for BB, B, and CCC indices ended the quarter at 4.36%, 5.99%, and 10.14%, respecitvely.[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

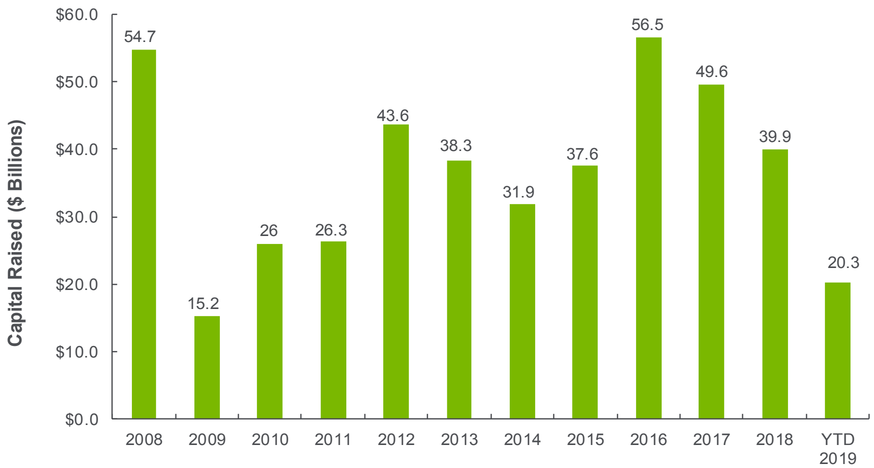
- Four funds closed on $1.2 billion during the second quarter. This was a significant decrease from the $12.4 billion raised by 10 funds in Q2 2018 and represented a decrease of 76.7% from the five-year quarterly average of $5.1 billion.[1]
- Estimated dry powder was $51.5 billion at the end of 2Q 2019, down from the $58.8 billion seen at the end of 1Q 2019.[1]
- Fundraising activity picked up with an estimated 73 funds in market targeting $29.0 billion of commitments, compared to 67 funds in market at the end of 2018 targeting $25.0 billion of commitments. HPS Mezzanine Partners 2019 is the largest fund in market, targeting commitments of $8.0 billion.[1]

Opportunity

- Funds with the capacity to scale for large sponsored deals

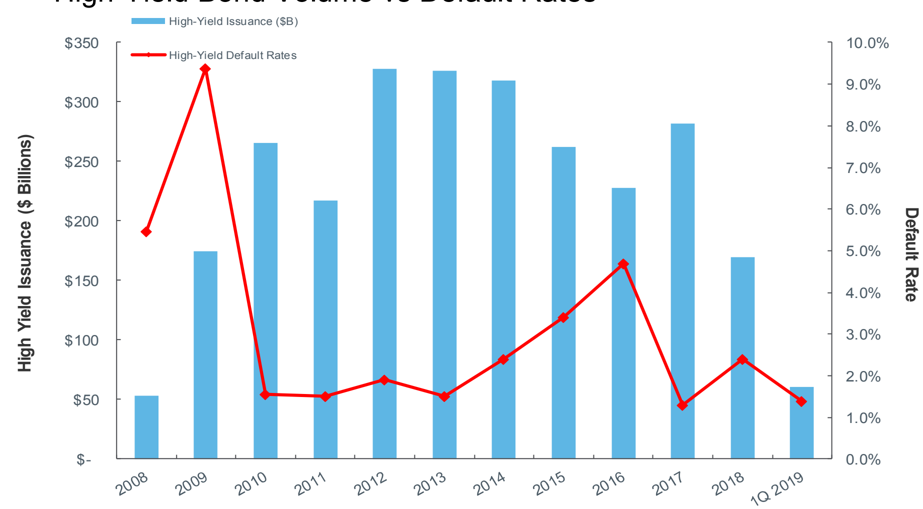
Distressed Private Markets

Distressed Debt, Turnaround, & Special Situations Fundraising



Source: Preqin

High-Yield Bond Volume vs Default Rates



Source: UBS & Fitch Ratings

Fundraising

- During the quarter, $15.3 billion was raised by 15 funds compared to $5.0 billion raised by 14 funds in 1Q 2019.[1]
  - 2Q 2019 fundraising was 39.6% higher than the five-year quarterly average of $11.0 billion.
  - GSO Energy Select Opportunities Fund II was the largest partnership raised during the quarter, closing on $4.5 billion.
- Dry powder was estimated at $119.4 billion at the end of 2Q 2019, up slightly from the $118.0 billion seen at the end of 1Q 2019. This was up compared to year-end 2018 ($117.5 billion). This remained above the five-year average level of $103.3 billion.[1]
- Roughly 118 funds were in the market at the end of 2Q 2019, seeking $59.7 billion in capital commitments.[1]
  - Distressed debt managers were targeting the most capital, seeking an aggregate $29.5 billion.
  - Fortress Credit Opportunities Fund V was the largest fund in market with a target fund size of $5.0 billion.

Activity

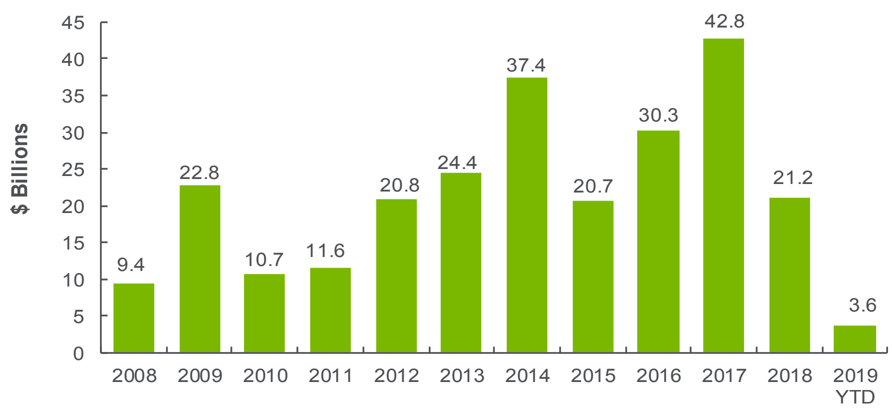
- The LTM U.S. high-yield default rate was 1.9% as of July 2019, which was down from year-end 2018's LTM rate of 2.4%.[6]
- While spreads remained in line with the prior period, a declining LIBOR rate saw yields tighten during the quarter. Credit markets are bracing for a volatile period moving forward, which may result in opportunities for lenders.[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

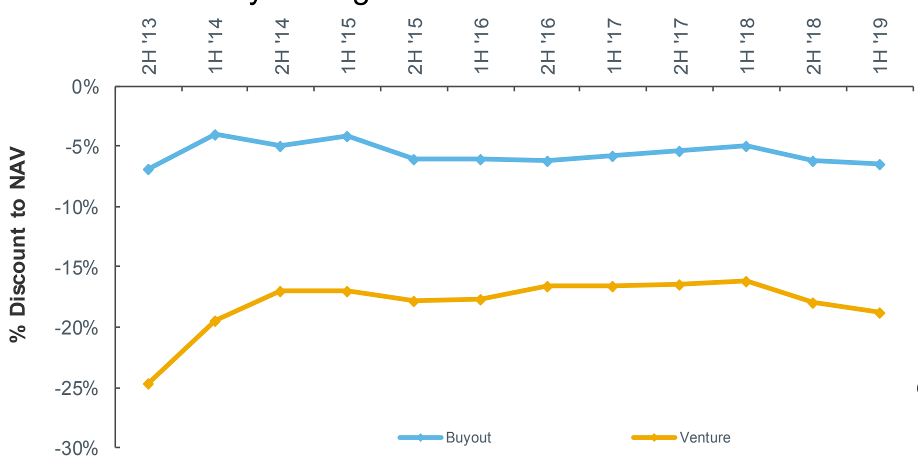
Secondaries

Secondary Fundraising



Source: Preqin

Secondary Pricing



Source: UBS

Fundraising

- Four funds raised $1.5 billion during the quarter, down from the $2.2 billion raised by nine funds in Q1 2019 and the $9.0 billion raised by ten funds in Q4 2018.[1]
  - 2Q 2019's aggregate capital raised represents 6.4% of 2018's full year total.
  - Adams Street Global Secondary Fund VI was the largest fund raised during the quarter, closing on $1.05 billion.[1]
- Approximately 73% of secondaries funds in market are raising capital to target North America, up 54% from 1H 2018. An estimated 84% of secondaries funds are targeting private equity investments.[1]
- At the end of 2Q 2019, there were an estimated 58 secondary and direct secondary funds in market, targeting approximately $74.6 billion. Ardian Secondaries Fund VIII and Lexington Capital Partners IX were the largest funds in the market targeting $12.0 billion each.[1]
  - Two funds, Ardian Secondaries Fund VIII and Lexington Capital Partners IX ($12.0 billion target), represent 32.2% of all capital being raised.[1]

Activity

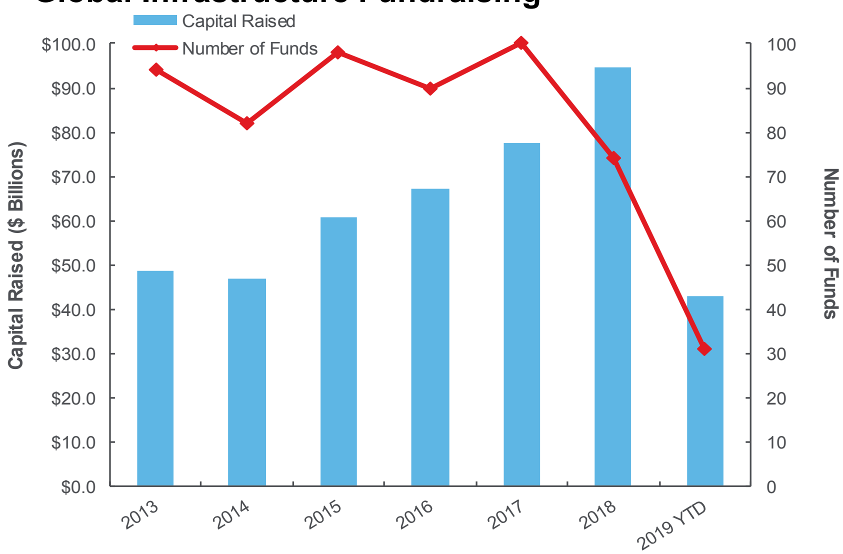
- Buyers have increasingly turned to leverage in their transactions in order to support attractive pricing and transaction execution. The spreads between committed capital and drawn capital by secondary purchasers has increased over the last quarter (and year).[2]
- The average discount rate for all private equity sectors finished Q2 2019 at 9.2%, down from 9.5% at the end of Q1 2019. The average buyout pricing discount ended at 6.4%, while venture ended at a discount of 18.8%.[2] The average buyout pricing discount for Q2 was down from Q1 2019's 6.8% discount, while the venture discount was up from 18.5%.
- Pricing, while having become slightly less favorable for buyers over the last quarter, is expected to remain attractive for sellers given the continued high levels of dry powder and competition for secondary transactions. Pricing increased marginally in Q2 due to reduced public market volatility and a slight decline in secondary fundraising.[2]
- For buyout pricing, tail-end vintages were being traded at larger discounts, while top performing funds continued to obtain premiums for their assets. While there is support and interest in pre-2010 vintage funds, there is significant volume and competition for younger vintages where premiums are often being commanded.[2]

Opportunity

- Funds that are able to execute complex and structured transactions at scale
- Funds that are able to leverage their long-standing relationships and networks in the secondaries marketplace
- Niche strategies

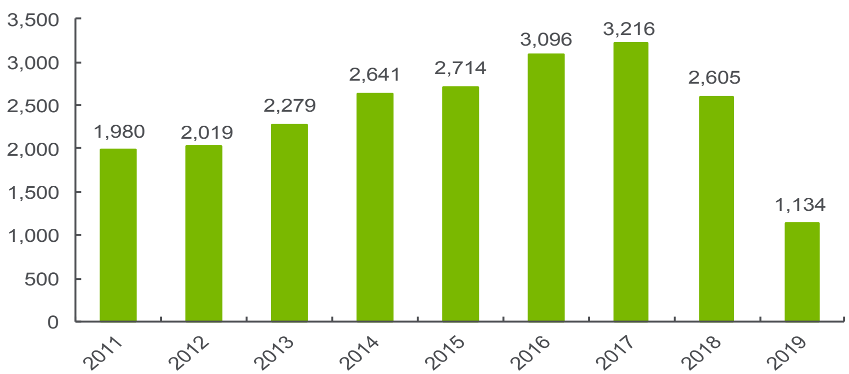
Infrastructure

Global Infrastructure Fundraising



Source: Preqin

Number of Deals Completed



Source: Preqin

Fundraising

- $23.1 billion of capital was raised by 29 funds in 2Q 2019 compared to $18.3 billion of capital raised by 21 partnerships in 1Q 2019, as capital continues to be concentrated around a smaller set of infrastructure managers.[1]
  - About 87.4% of the capital raised is targeting investment in North America or Europe.[1]
- As of the end of 1Q 2019, there were an estimated 173 funds in the market seeking roughly $162.0 billion, compared to 210 funds targeting $190.0 billion in 1Q 2019.[1]
  - The majority of infrastructure funds in market are targeting capital commitments of $1.0 billion or more.[1]
  - Global Infrastructure Partners IV and Brookfield Infrastructure Fund IV were the largest funds in the market as of the end of 2Q 2019, targeting $20.0 billion each. Both are focused on making investments within the U.S.[1]
- At the end of the quarter, dry powder stood at an estimated $217.0 billion, up from Q1 2019 of $185.0 billion.[1] Current dry powder levels for infrastructure are at five year highs.[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

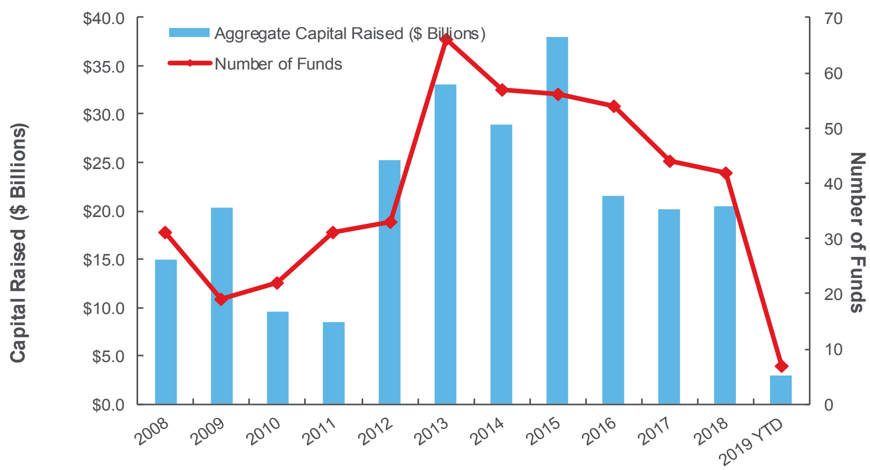
- Infrastructure managers completed 582 deals with an estimated aggregate deal value of $155.0 billion in 2Q 2019 compared to 552 deals totaling $63.0 billion a quarter ago.[1] The average deal value during the quarter was $266.3 million, up compared to the five-year average of $135.0 million.
  - North America accounted for 33.5% of the deals in 2Q 2019, while 36.6% and 12.2% of deals were transacted in Europe and Asia, respectively.[1]
  - Renewable energy was the dominant industry during the quarter with 52.9% of transactions, followed by the utilities and conventional energy sectors, which accounted for 14.4% and 13.9%, respectively, of the quarter's deals. Transport accounted for 9.6% of transactions.[1]

Opportunity

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

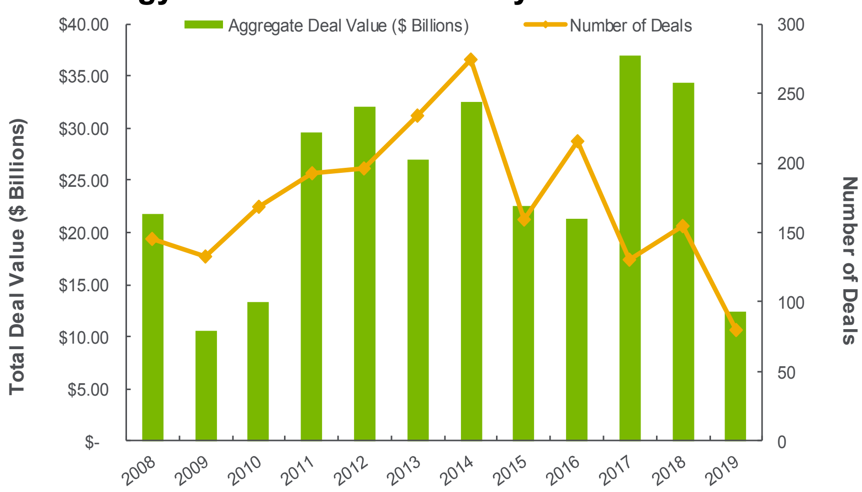
Natural Resources

Natural Resources Fundraising



Source: Preqin

Energy & Utilities Deal Activity



Source: Preqin

Fundraising

- During 2Q 2019, two funds closed on $0.4 billion compared to five funds totaling $1.5 billion in 1Q 2019.[1]
- At the end of 2Q 2019, there were roughly 97 funds in the market targeting an estimated $36.6 billion in capital, compared to 94 funds seeking an estimated $36.1 billion in 1Q 2019.[1]
  - NGP Natural Resources XII was seeking the most capital with a target fund size of $5.3 billion.
- Dry powder was estimated at $49.7 billion at the end of 2Q 2019, which was down 7.8% from 1Q 2019's level, and remains below the record level of $72.1 billion observed in 4Q 2015.[1]

Activity

- Energy and utilities industry managers completed 80 deals totaling a reported $12.4 billion in 2Q 2019, representing 51.6% and 36.1% of 2018's total deal activity and total deal value, respectively.[1]
- Crude oil prices decreased during the quarter.
  - WTI crude oil prices decreased 6.0% during the quarter to $54.66/bbl.[11]
  - Brent crude oil prices ended the quarter at $64.22/bbl, down 2.9% from Q1 2019.[11]
- Natural gas prices (Henry Hub) decreased by a significant 18.6% during the second quarter, ending at $2.40 per MMBtu.[11]
- A total of 958 crude oil and natural gas rotary rigs were in operation in the U.S. at the end of 2Q 2019, down 5.4% from the prior quarter. Crude oil rigs represented 81.8% of the total rigs in operation, while gas rigs represented 18.0% of the total rigs in operation.[15]
- The price of iron ore (Tianjin Port) ended the second quarter at $108.94 per dry metric ton, up by 26.0% quarter-over-quarter.[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
2Q 2019

United States Real Estate Market Update (2Q19)

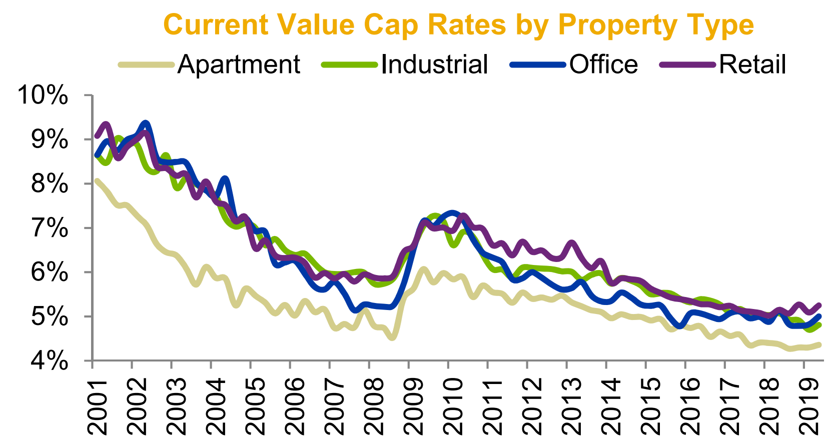
General

- The S&P 500 produced a gross total return of 4.3% during the quarter. The MSCI US REIT index produced a return of 1.3%. Consumer Sentiment remained flat at 98.2, but rose subsequent to quarter-end.
- Macro indicators for U.S. real estate continue to be positive; GDP grew at an annualized rate of 2.3% in the second quarter and headline CPI rose by 1.8% YoY, below the Fed's 2% target. As of quarter-end, the economy has now experienced 105 consecutive months of job growth. The Federal Reserve has paused its tightening of monetary policy, and cut the effective federal funds rate, which was 2.13% at quarter-end.

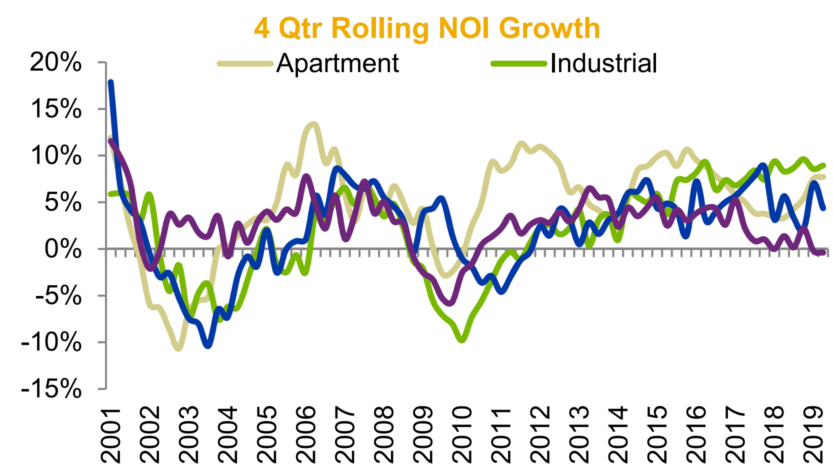
Commercial Real Estate

- Private real estate market carrying values remained flat over the quarter. Transaction cap rates (5.3%) compressed 5 bps during the quarter, while current valuation cap rates expanded across property sectors, apartments (+6 bps), industrial (+11 bps), office (+18 bps), and retail (+16 bps) .
- NOI growth by sector continued to deviate during the quarter, with the industrial and apartments sector continuing to outpace the other traditional property types. While the industrial sector has faced increasing supply, it continues to benefit from outsized demand tailwinds (e-commerce and economic growth). On the other hand, retail experienced negative 40 bps of NOI growth during the quarter.
- In the second quarter of 2019, $23 bn of aggregate capital was raised by real estate funds. In 2018, private equity real estate funds raised $236 bn which is an increase of 9% YoY. However, transaction volume declined during the 1st quarter by 18% year over year to $28 bn.
- 10-year treasury bond yields dropped 40 bps to 2.0% during the quarter, and, subsequent to quarter-end, have dropped further to 1.7%. A combination of expansionary fiscal policy and tightening monetary policy have led to increasing short-term interest rates and an inversion of the yield curve.

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



Source: NCREIF



Source: NCREIF

United States Property Matrix (2Q19)

INDUSTRIAL

- In 2Q19, industrial properties were the highest returning sector at 3.4% and outperformed the NPI by 191 bps.
- Transaction volumes reached $19.1 billion in the second quarter of the year, a 4.0% year-over-year decrease. Individual asset sales were up 13.6% year-over-year, while portfolio sales drove the decline in year-over-year volume (-31.5%).
- The industrial sector continued to experience steady NOI growth of 8.9% over the past year, increasing from the prior periods TTM growth of 8.6% in 1Q19. Market rent growth is expected to decelerate compared to the recent phenomenal pace, but still remains strong.
- Vacancy declined 40 bps to 3.1%, close to all-time historic lows. E-commerce continues to drive demand.
- Industrial cap rates compressed approximately 12 bps from a year ago, to 4.8%. Industrial fundamentals still top all property sectors.

MULTIFAMILY

- The apartment sector delivered a 1.4% return during the quarter, underperforming the NPI by 9 bps.
- Transaction volume in the second quarter of 2019 reached $45.6 billion, an increase of 25.3% year-over-year. This volume continues to make multifamily the most actively traded sector for the eighth straight quarter.
- Cap rates increased to 4.4%, expanding 9 bps year-over-year. Robust job growth and improving wages have supported healthy operating fundamentals.
- Steady demand for the sector continues to keep occupancy above 94.3%, over a 1.0% increase from a year ago. Delayed deliveries from construction labor bottlenecks have created a gap between permitting activity and starts volume.

OFFICE

- The office sector returned 1.7% in 2Q19, 15 bps above the NPI return over the period.
- Transaction volumes increased by 36.4% year-over-year in Q2. Annual sales volumes equaled $39.5 billion for the quarter. Single asset transactions accounted for 77% of volume.
- Occupancy growth within the office sector has improved, increasing 1.0% year-over-year. Office continues to be the highest vacancy property type at close to 9.8%.
- NOI growth of 4.4% in the last year is a positive as the sector continues to benefit from positive job growth. Sun Belt and tech-oriented West Coast office fundamentals are healthiest.
- Office cap rates compressed slightly from a year ago to approximately 4.8% in the second quarter. Office-using job growth is positive, though decelerating as expected.

RETAIL

- As of 2Q19, the retail sector delivered a quarterly return of -0.1%, performing 162 bps below the NPI.
- Transaction volumes totaled $16.9 billion in the second quarter, down 22.7% year-over-year.
- Cap rates have expanded approximately 25 bps within the sector over the last year. Strong fundamental headwinds continue to effect the retail landscape.
- NOI growth has been negative for five consecutive quarters. NOI has declined 40 bps over the past year. Retail is expected to continue to suffer from the shift towards e-commerce.
- Retail vacancy rates declined 74 bps over the past year to 6.8%. Many big box stores have closed as the need for retail space shrinks, translating to a negative outlook for rent growth.

Sources: Real Capital Analytics, Green Street, US Census Bureau, NCREIF

Global Real Estate Market Update (2Q19)

TOWNSEND® GROUP
an Aon company

- Global investment activity during the second quarter of 2019 continues to slow, and YoY transaction activity has decreased.

- Geopolitical uncertainty and its potential impacts on the global real estate markets has remained a principal concern for investors. However, global commercial real estate is still positioned to steadily perform in 2019. Despite compressing yields, broad decreases in risk-free rates has increased the value of real estate yields. Capital values and rents are expected to increase during the year. However, full-year global investment volumes are expected to decline by 5-10%, especially in the office and retail sectors.

Global Total Commercial Real Estate Volume - 2018 - 2019

$ US Billions	Q2 2019	Q2 2018	% Change Q2 19 - Q2 18	H1 2019	H1 2018	% Change H1 19 - H1 18
Americas	120	114	5%	214	221	-3%
EMEA	67	79	-15%	126	158	-20%
Asia Pacific	257	211	22%	433	428	1%
Total	444	404	10%	773	807	-4%

Source: Real Capital Analytics, Inc., Q2' 19

- In the second quarter, investment volumes in the Americas to decline YoY, led by the U.S., Brazil, and Mexico.

- Asia-Pacific cross-border investment activity slightly decreased in the second quarter. Despite this, Asia-Pacific has shown the best first-half of the year performance on record. This growth was driven by robust activity in China and Singapore.

- In EMEA, the decline in investment volume is largely attributable to uncertainty over Brexit in the UK and ongoing structural changes in the retail sector.

- In the office sector, leasing activity continued to increase through the second quarter of 2019. The U.S office market continued to perform well, driven by demand from the technology and co-working industries. Europe's net absorption outperformed the 10 year average, led by performance in Madrid. In Asia Pacific's office market gross leasing volumes witnessed a 30% year-over year decline due to limited availability of space, economic uncertainty and trade tensions. Globally, aggregate rental growth for prime office locations is expected to stay positive in 2019 and office vacancy is expected to continue to fall.

- In the retail sector, the U.S. net absorption declined by 45% YoY in the second quarter. Strengthening labor markets and wage growth in Europe has positively impacted consumer spending, and retailers continue to focus on rightsizing their store portfolios. Asia Pacific retailers are focusing their efforts on providing unique products and targeting niche consumer segments. Australia is experiencing challenging retailer market pressures and rising incentives leading to modest rental growth.

- The multifamily market in the U.S. has continued to see growth in demand and declines in vacancy rates. There has been an increase in construction activity which is likely to lead to some near-term supply headwinds. Investment activity in European multifamily markets was lower due to rent control regulation leading to investor caution.

- The global industrial market continued to perform well during the quarter, with vacancy rates in the U.S. and Asia Pacific at all-time lows, as demand continues to be robust. U.S. rental rates are excepted to increase, driven by robust leasing momentum. Demand has been strong in the European logistics market as well, however, a slight deceleration in the rate of growth suggests the sector may be entering a stage of stabilization.

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

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

	2019	2020	2021
Global	**3.2**	**3.2**	**3.0**
Asia Pacific	**4.5**	**4.5**	**4.6**
Australia	1.9	2.5	2.6
China	6.2	6.0	5.8
India	6.6	6.7	7.0
Japan	1.0	0.3	0.9
North America	**2.2**	**1.8**	**1.8**
US	2.3	1.8	1.8
MENA*	**2.6**	**2.9**	**3.1**
European Union	**1.4**	**1.4**	**1.5**
France	1.3	1.3	1.4
Germany	0.6	0.9	1.2
UK	1.2	1.2	1.5

*Middle East North Africa

Source: Bloomberg

Note: 2021 projections are not yet available for certain regions

This page intentionally left blank.

TAB H

Report

Meketa Capital Markets Outlook & Risk Metrics

This page intentionally left blank.

Capital Markets Outlook & Risk Metrics

As of September 30, 2019

M E K E T A   I N V E S T M E N T   G R O U P
100 LOWDER BROOK DRIVE   SUITE 1100   WESTWOOD MA 02090
781 471 3500   fax 781 471 3411   www.meketagroup.com

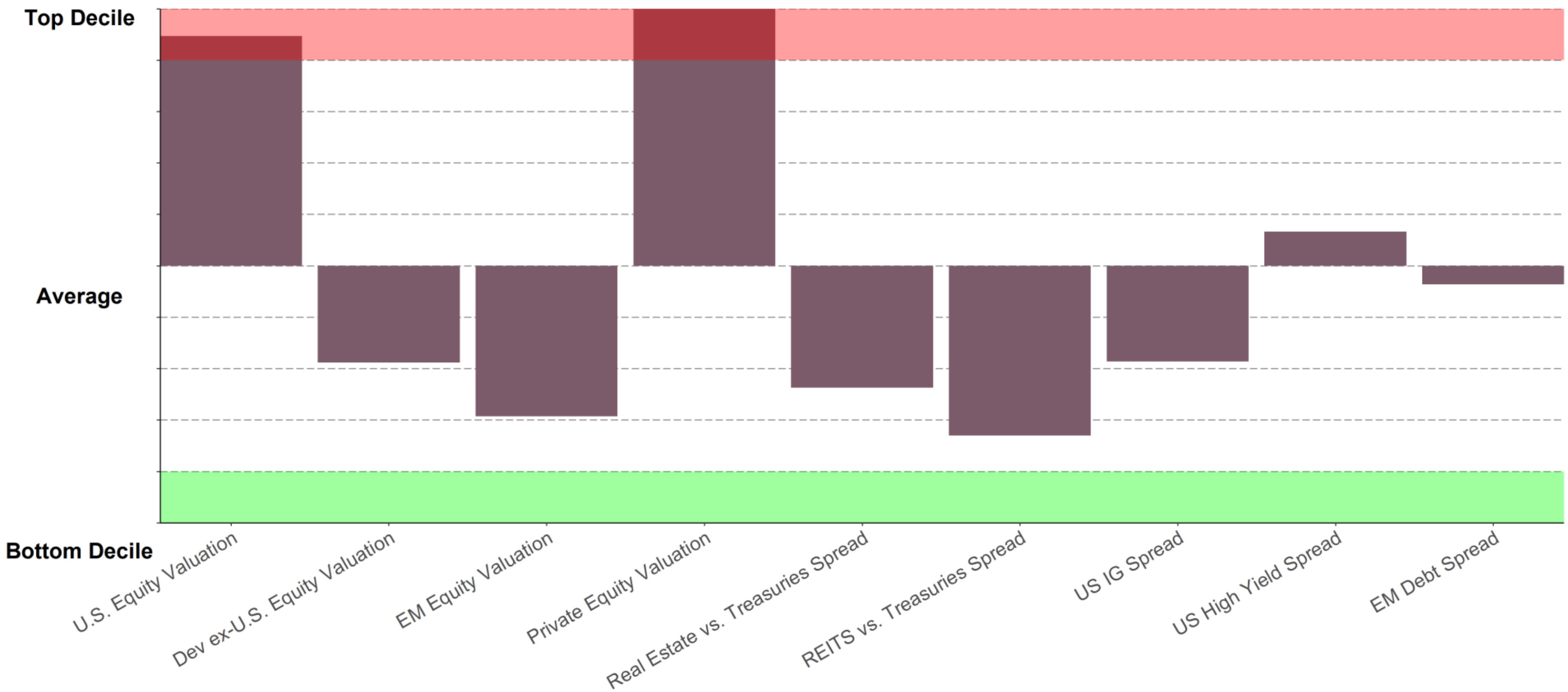
Capital Markets Outlook

Takeaways

- From a market performance perspective, September was a relatively normal “risk-on” month as most Global Equity markets produced positive returns whereas most sovereign-oriented Fixed Income markets produced negative returns. On a year-to-date basis, however, most indices across Global Equity and Global Fixed Income markets have produced unusually high returns.
- Recent interest rate movements are historically consistent with oncoming recessions. However, economic data remains extremely mixed and shifting political rhetoric regarding global trade has added to short-term uncertainty. In the face of all this, Global Equity markets have continued to deliver positive returns.
- While there continues to be significant discussion regarding interest rates (e.g., yield curve inversions, central bank policy, etc.), the complexity of the current environment has increased what is always an immense challenge for forecasting.
- US Equity markets remain expensive whereas Non-US Equity markets remain reasonably valued relative to their history.
- Implied equity market volatility[1] remained lower than its historical average (≈19) throughout the entire month of September, although this metric did steadily rise from mid-month (≈13) to the end of the month (≈17).
- The Market Sentiment Indicator[2] stayed at neutral at month end.
- Market uncertainty, as measured by Systemic Risk, decreased during September. With that said, recent economic data suggests that the global economy is in a slowing, but not yet recessionary, phase. The potential for negative surprises exists as global economies navigate their respective “late-cycle” dynamics and geopolitical events continue to unfold, as evidenced by recent market movements.
- *New Addition: We incorporated a measure of Fixed Income Volatility to the Dashboard.*

[1] As measured by VIX Index.
[2] See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

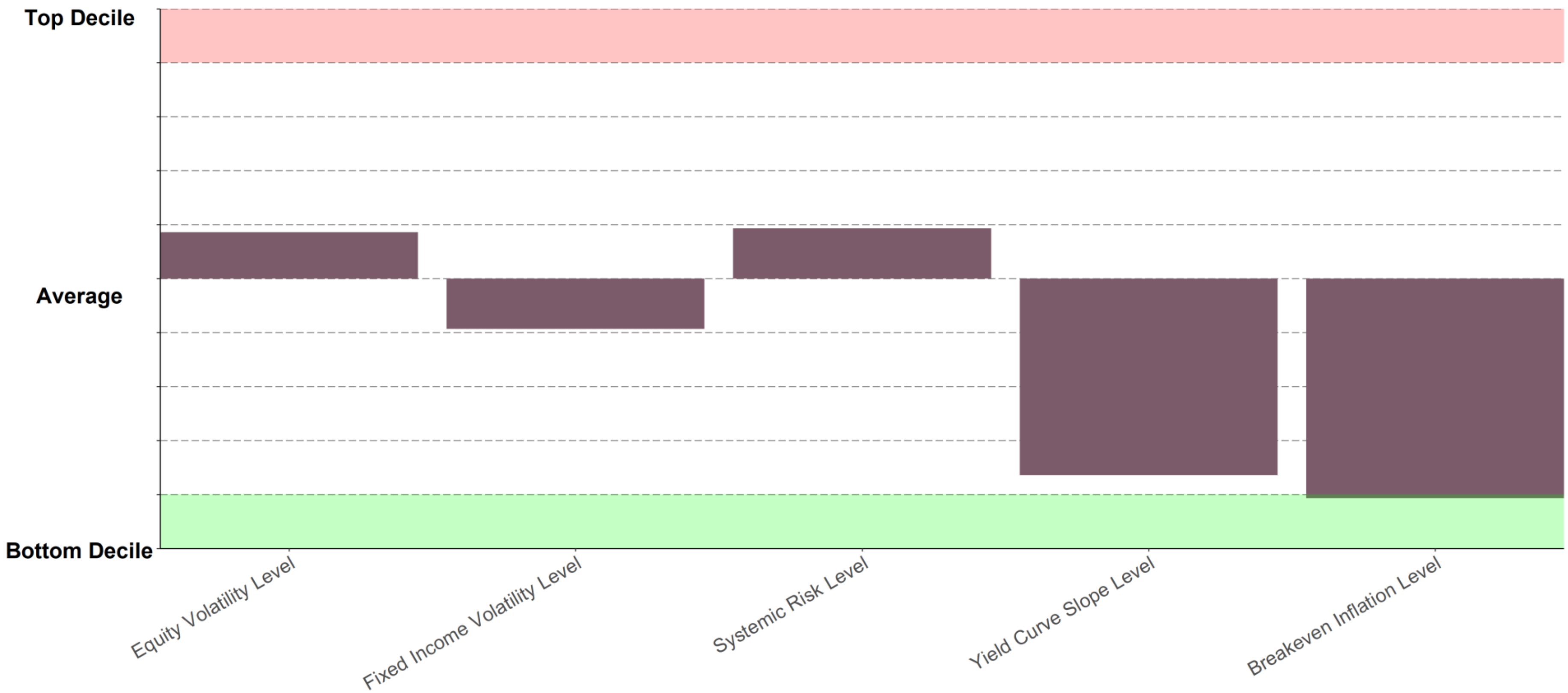
Risk Overview/Dashboard (1)
(As of September 30, 2019)[1]



- Dashboard (1) summarizes the current state of the different valuation metrics per asset class relative to their own history.

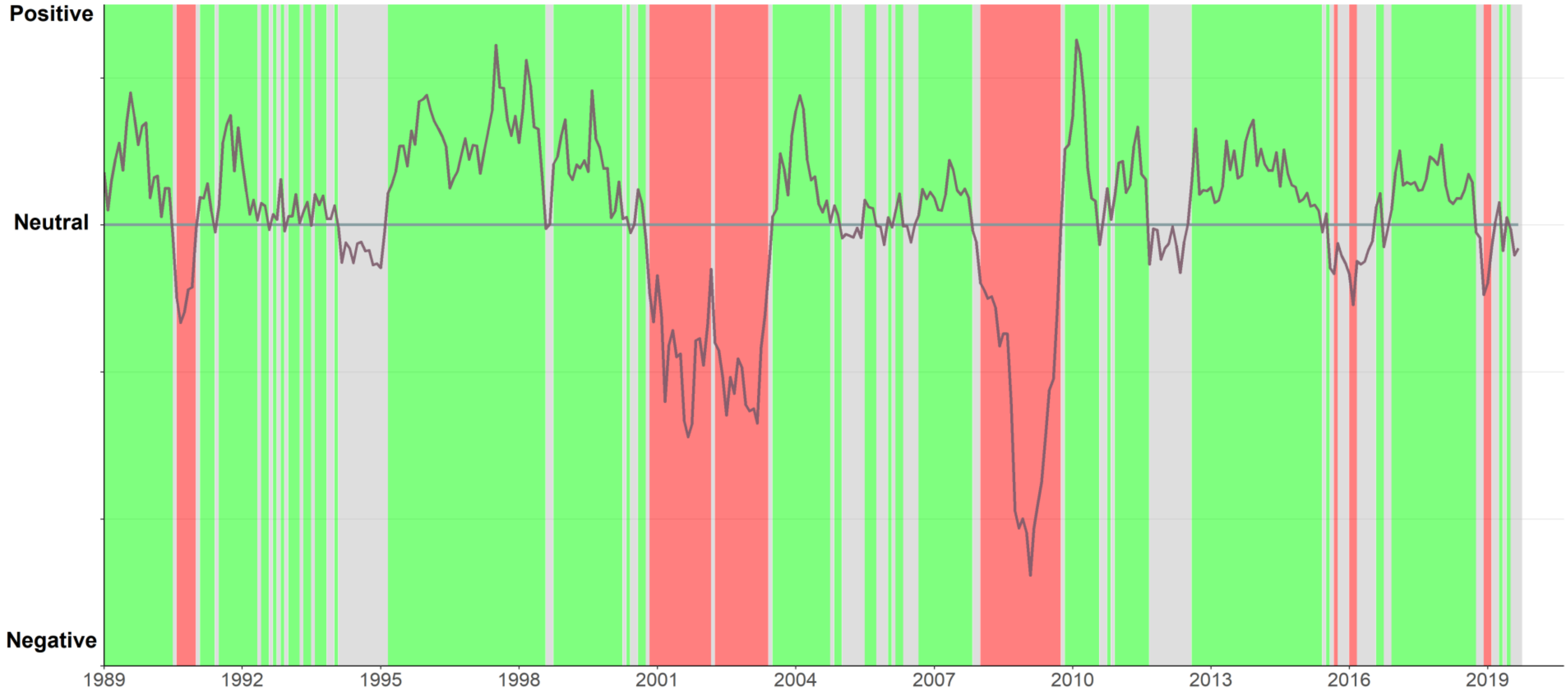
[1] With the exception of Private Equity Valuation that are available annually and data is as of December 31, 2018.

Risk Overview/Dashboard (2)
(As of September 30, 2019)

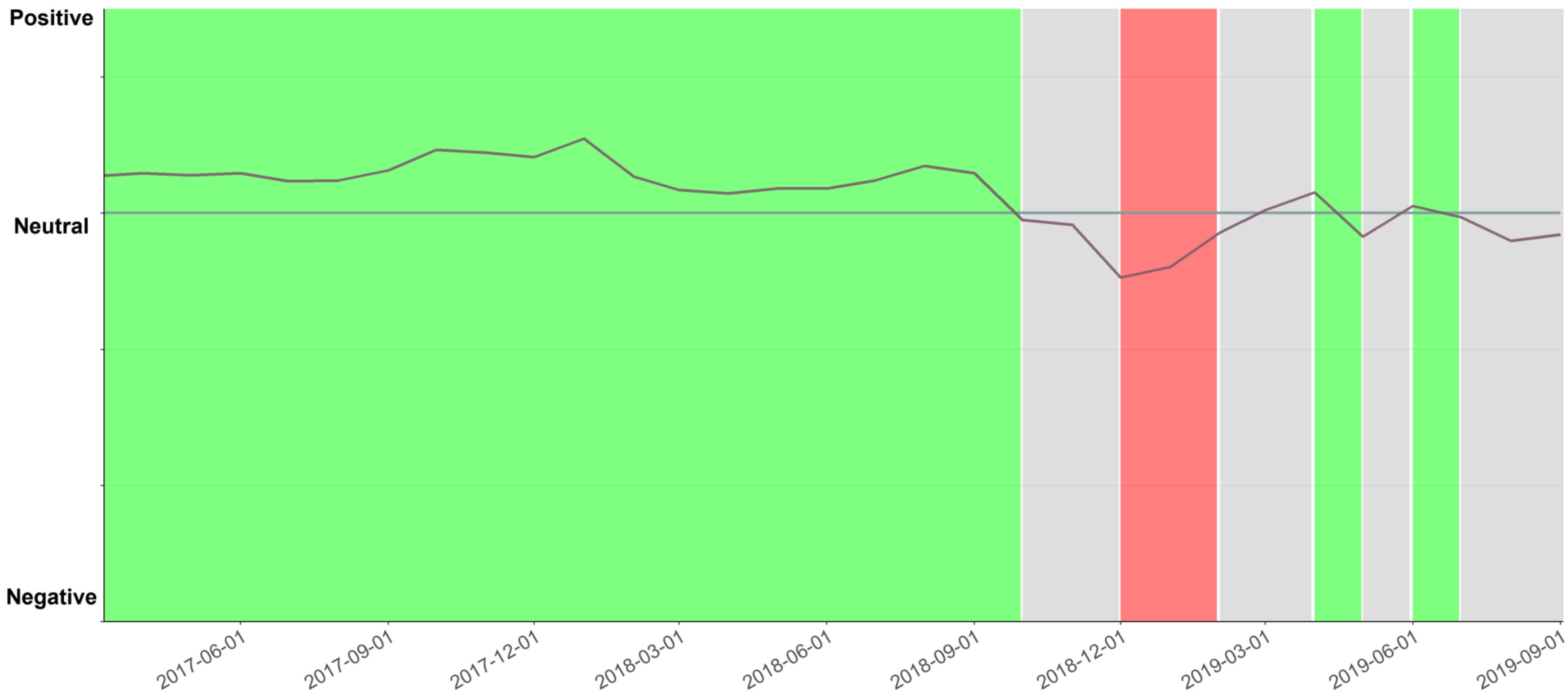


- Dashboard (2) shows how the current level of each indicator compares to its respective history.

Market Sentiment Indicator (All History)
(As of September 30, 2019)



Market Sentiment Indicator (Last Three Years)
(As of September 30, 2019)

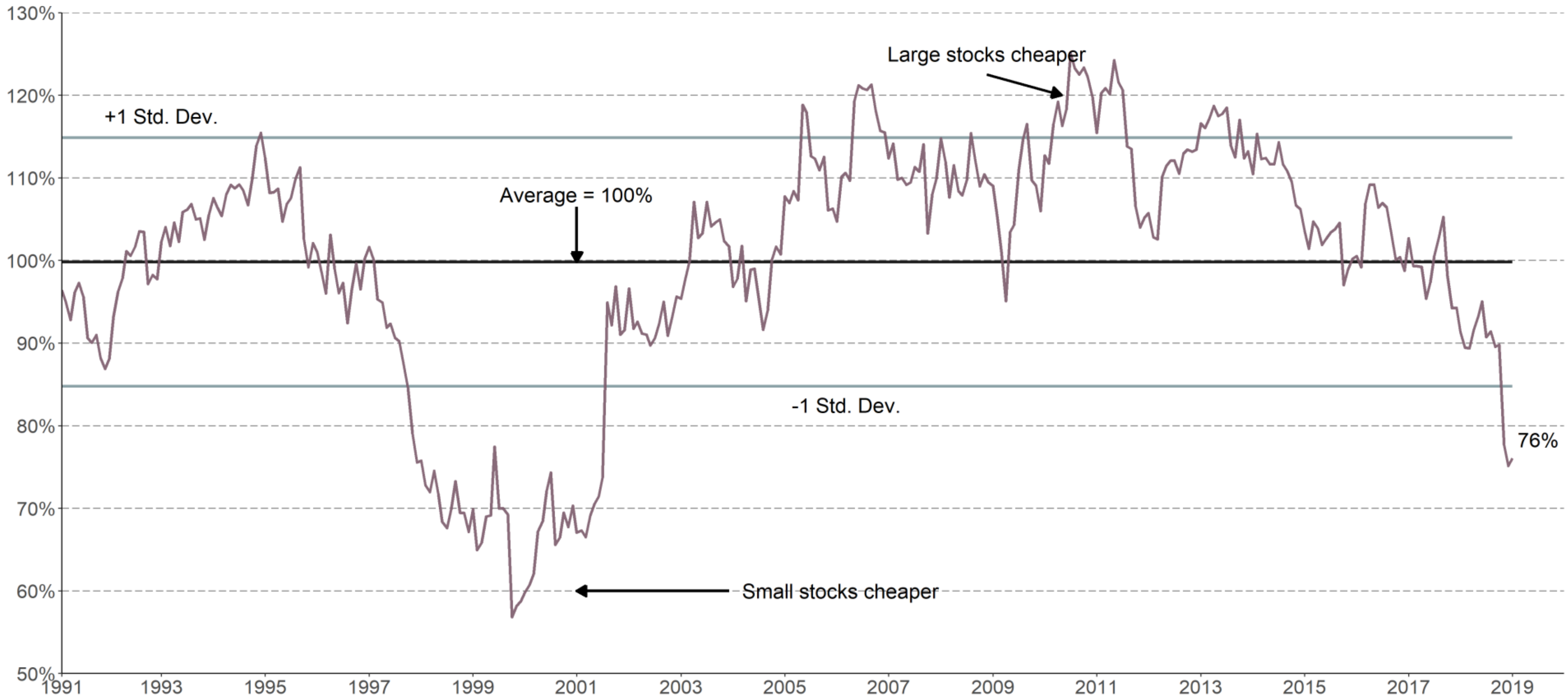


US Equity Cyclically Adjusted P/E[1]
(As of September 30, 2019)

- This chart details one valuation metric for US Equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.

Small Cap P/E vs. Large Cap P/E[1]
(As of September 30, 2019)



- This chart compares the relative attractiveness of Small Cap US Equities vs. Large Cap US Equities on a valuation basis. A higher (lower) figure indicates that Large Cap (Small Cap) is more attractive.

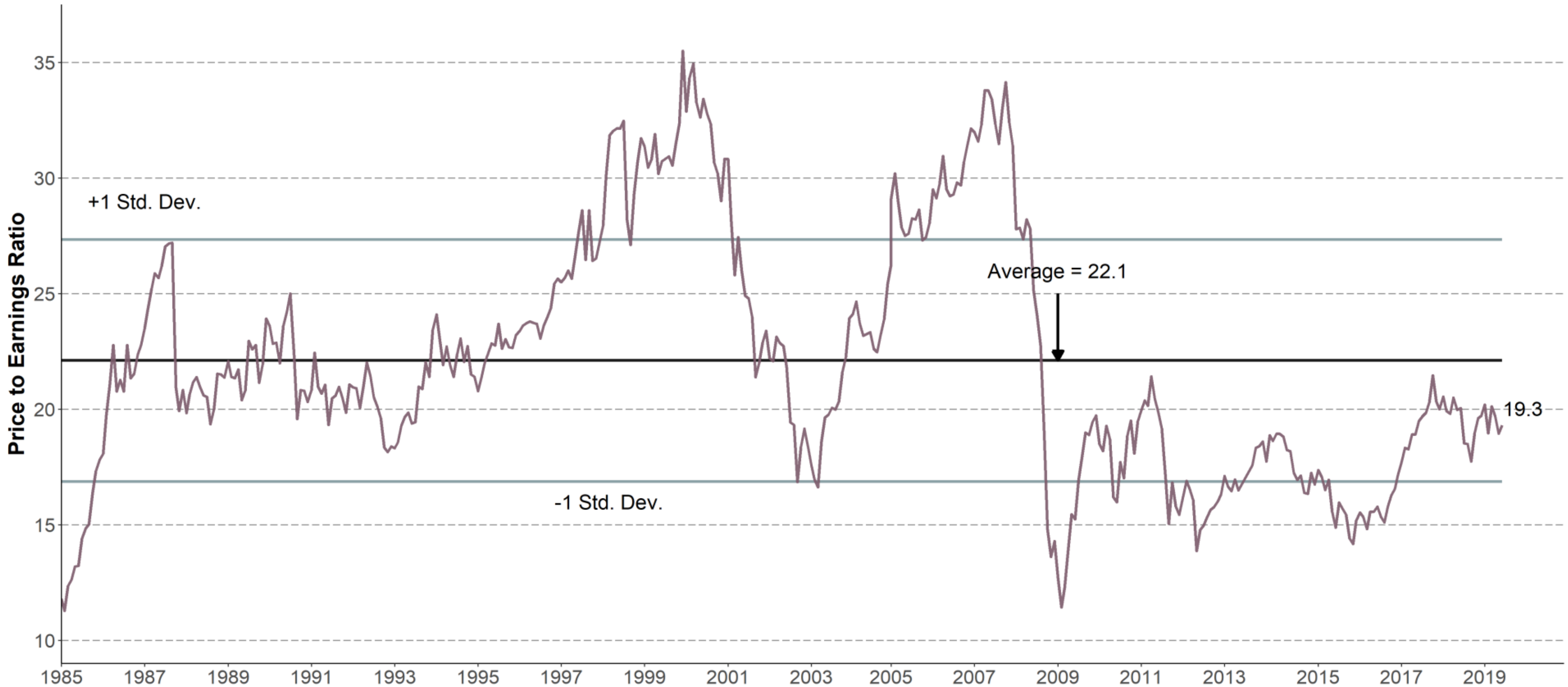
[1] Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.

Growth P/E vs. Value P/E[1]
(As of September 30, 2019)

- This chart compares the relative attractiveness of US Growth Equities vs. US Value Equities on a valuation basis. A higher (lower) figure indicates that Value (Growth) is more attractive.

[1] Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month "as reported" earnings.

Developed International Equity Cyclically Adjusted P/E[1]
(As of September 30, 2019)



- This chart details one valuation metric for Developed International Equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

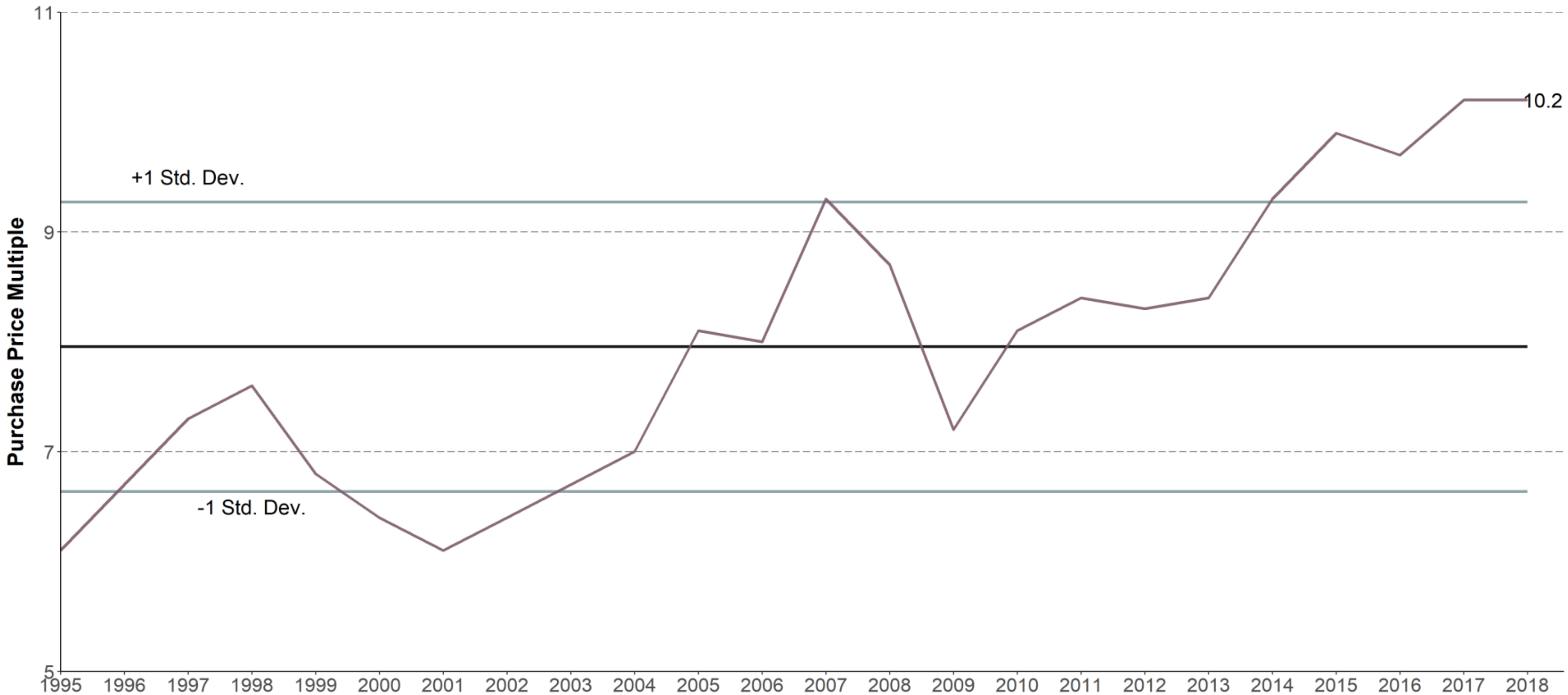
[1] Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years.

Emerging Market Equity Cyclically Adjusted P/E[1]
(As of September 30, 2019)

- This chart details one valuation metric for Emerging Markets Equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly "as reported" earnings over the previous ten years.

Private Equity Multiples[1]
(As of December 31, 2018)[2]

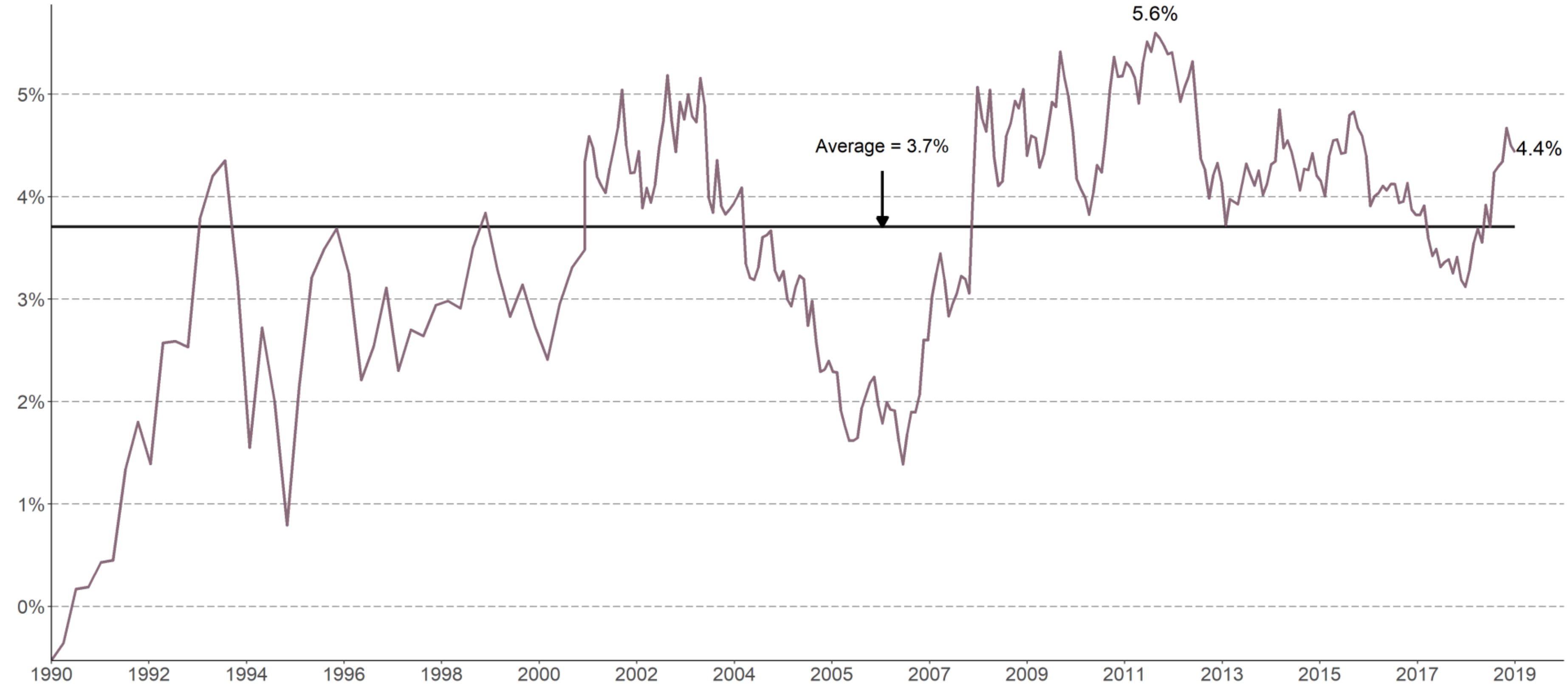


- This chart details one valuation metric for the Private Equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.
[2] Only annual figures available.

Core Real Estate Spread vs. Ten-Year Treasury[1]

(As of September 30, 2019)



- This chart details one valuation metric for the Private Core Real Estate market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[1] Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.

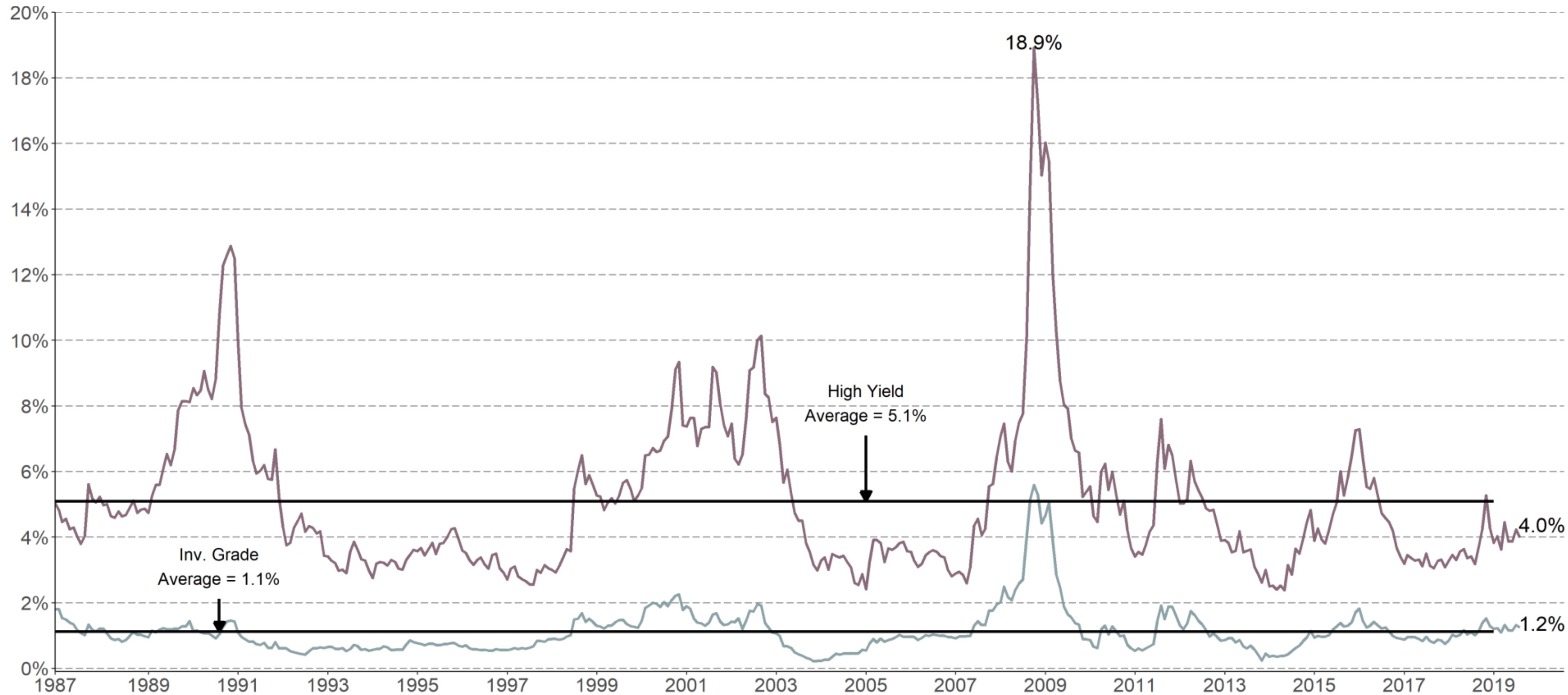
REITs Dividend Yield Spread vs. Ten-Year Treasury[1]
(As of September 30, 2019)

- This chart details one valuation metric for the Public REITs market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[1] REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

Credit Spreads[1]

(As of September 30, 2019)



- This chart details one valuation metric for the US Credit markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

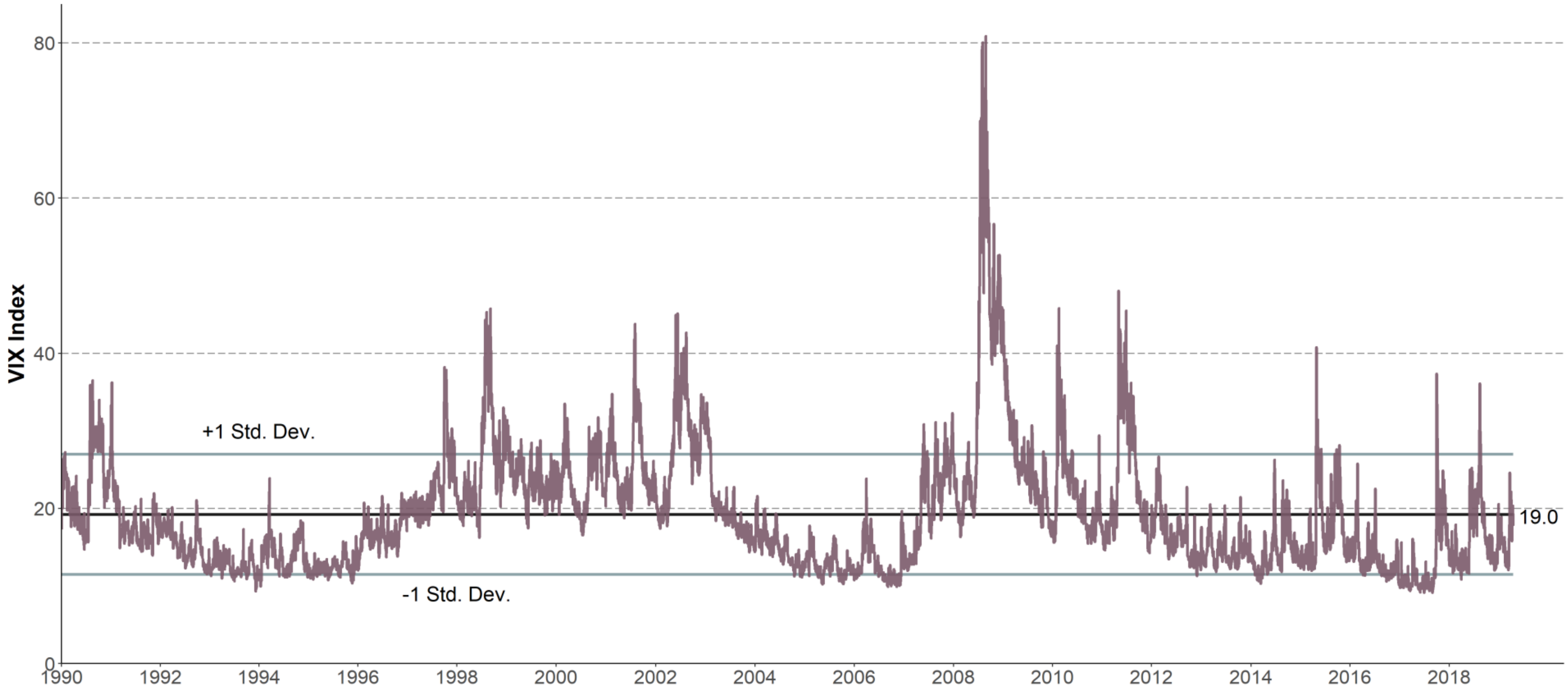
[1] Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.

Emerging Market Debt Spreads[1]
(As of September 30, 2019)

- This chart details one valuation metric for the EM Debt markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

[1] EM Spreads – Source: Bloomberg. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.

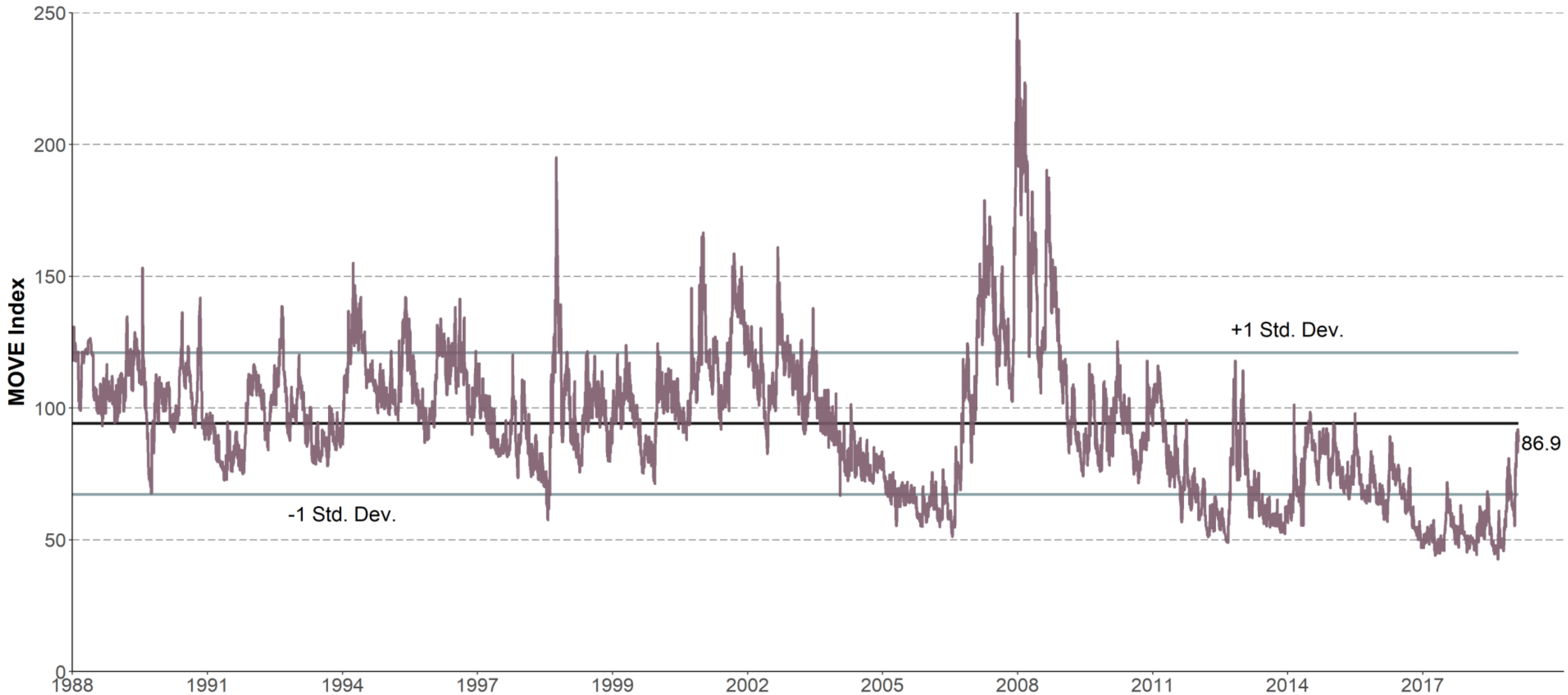
Equity Volatility [1]
(As of September 30, 2019)



- This chart details historical implied equity market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

[1] Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

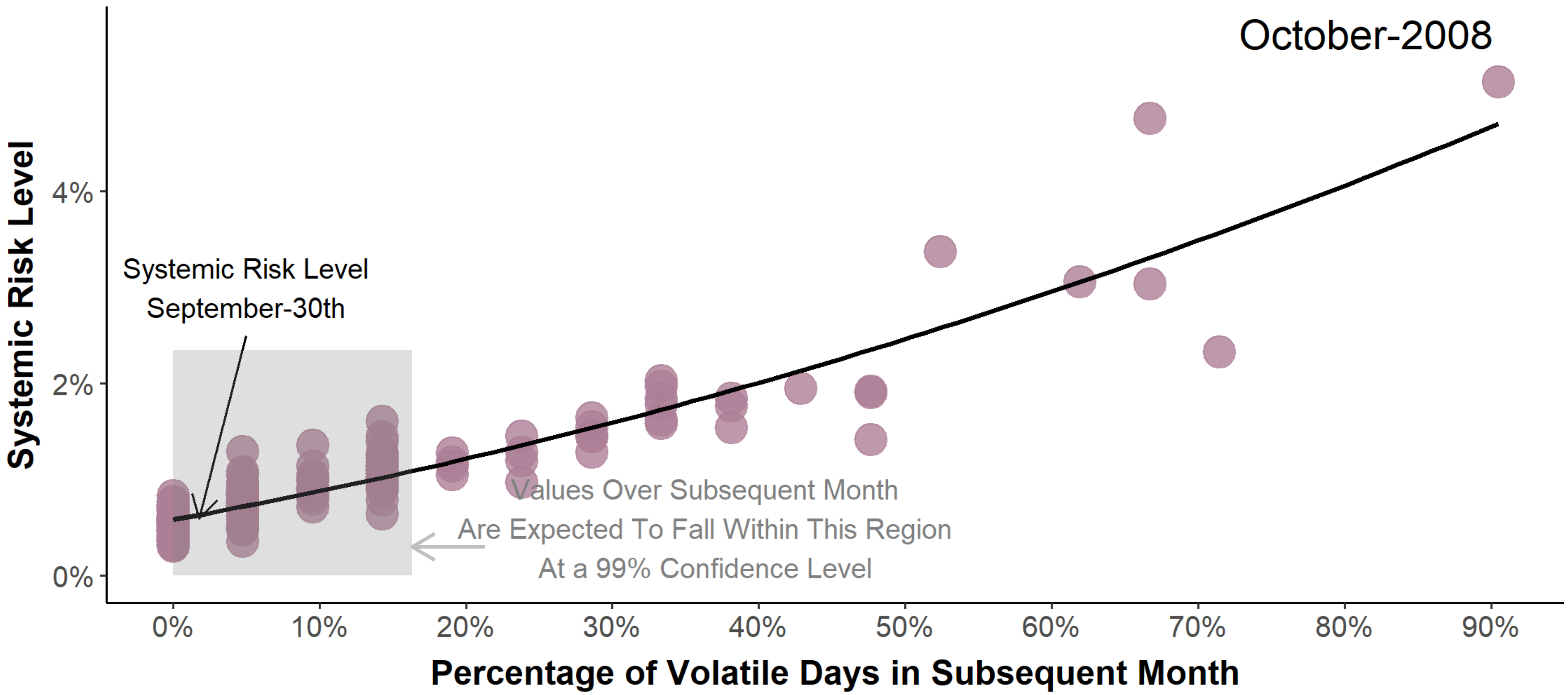
Fixed Income Volatility [1]
(As of September 30, 2019)



- This chart details historical implied fixed income market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

[1] Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Fixed Income Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.

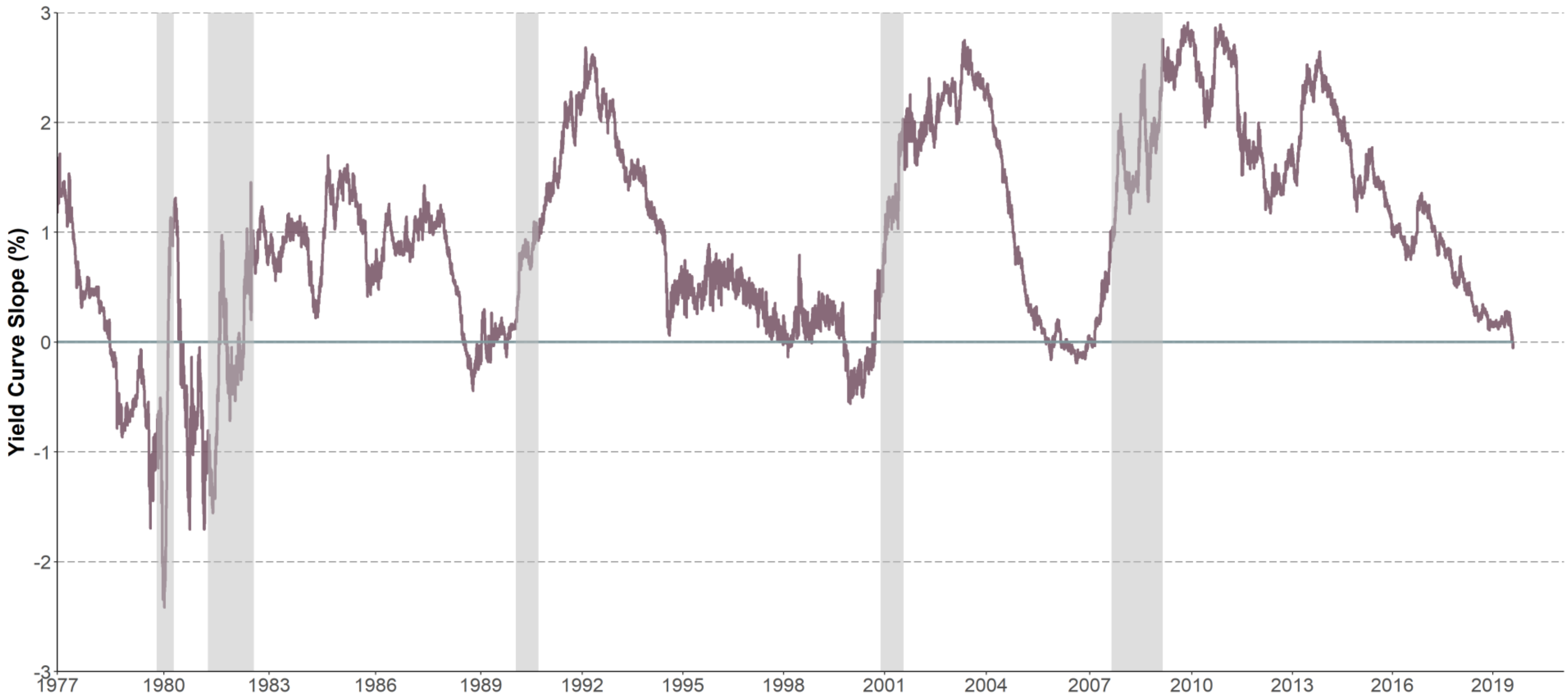
Systemic Risk and Volatile Market Days[1]
(As of September 30, 2019)



- Systemic Risk is a measure of 'System-wide' risk, which indicates herding type behavior. This measure declined materially during September.

[1] Source: Meketa Investment Group, as of September 30, 2019. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.

Yield Curve Slope (Ten Minus Two)[1]
(As of September 30, 2019)



- This chart details the historical difference in yields between ten-year and two-year US Treasury bonds/notes. A higher (lower) figure indicates a steeper (flatter) yield curve slope.

[1] Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

Ten-Year Breakeven Inflation[1]

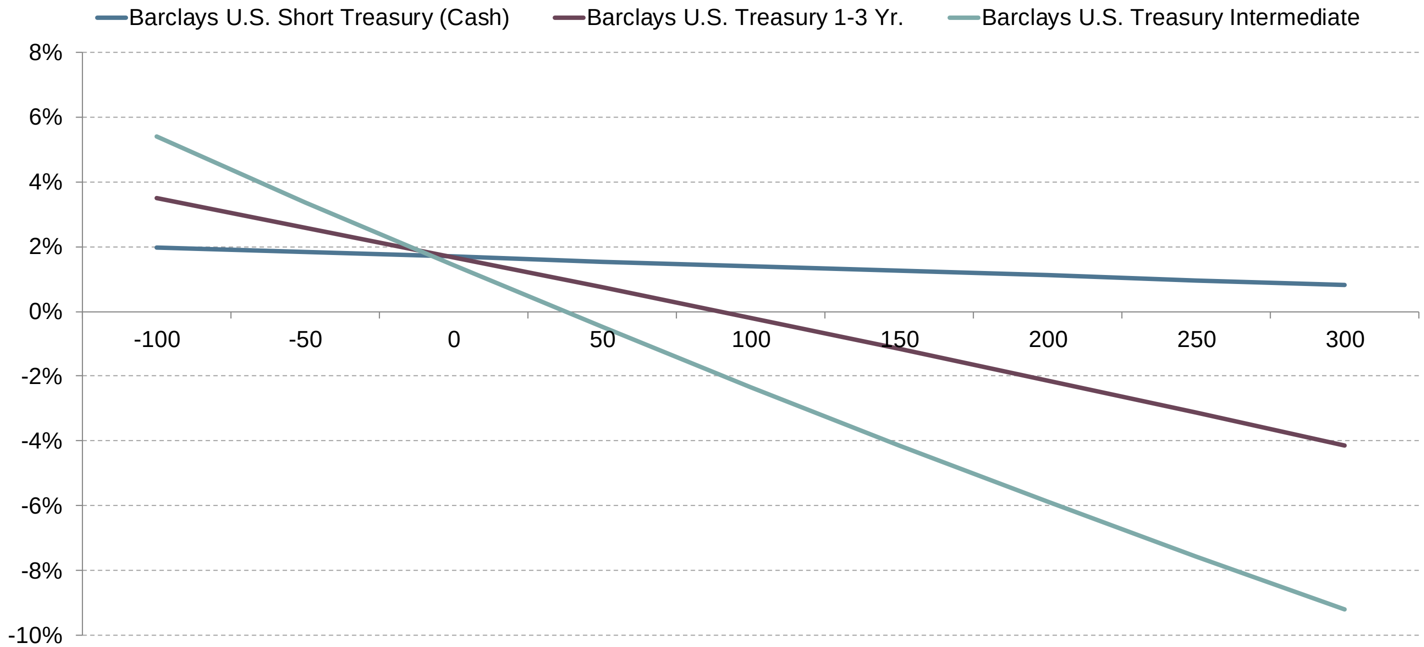
(As of September 30, 2019)

- This chart details the difference between nominal and inflation-adjusted US Treasury bonds. A higher (lower) figure indicates higher (lower) inflation expectations.

[1] Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Data is as of June 30, 2019 for TIPS and Treasuries. Inflation is measured by the Consumer Price Index (CPI-U NSA).

Total Return Given Changes in Interest Rates (bps)[1]

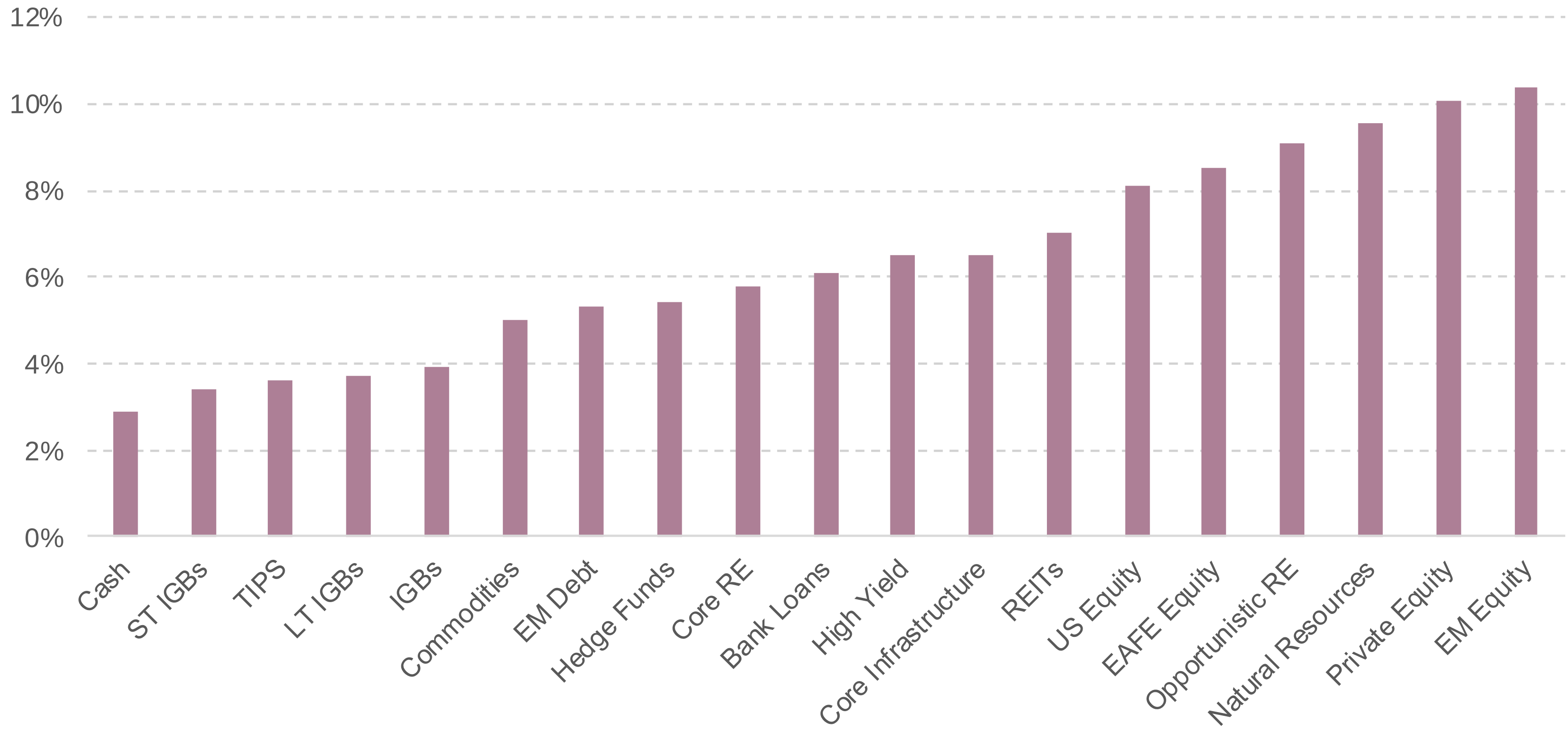
(As of September 30, 2019)



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	2.0%	1.8%	1.7%	1.5%	1.4%	1.3%	1.1%	1.0%	0.8%	0.29	1.69%
Barclays US Treasury 1-3 Yr.	3.5%	2.6%	1.7%	0.8%	-0.2%	-1.2%	-2.1%	-3.1%	-4.1%	1.84	1.68%
Barclays US Treasury Intermediate	5.4%	3.4%	1.4%	-0.5%	-2.3%	-4.1%	-5.9%	-7.6%	-9.2%	3.87	1.42%
Barclays US Treasury Long	22.5%	11.7%	2.0%	-6.7%	-14.3%	-20.8%	-26.3%	-30.7%	-34.0%	18.4	1.98%

[1] Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Data is as of September 30, 2019 via Barclays, Bloomberg, and Meketa Investment Group.

Long-Term Outlook – 20-Year Annualized Expected Returns[1]



- This chart details Meketa's long-term forward-looking expectations for total returns across asset classes.

[1] Source: Meketa Investment Group's 2019 Annual Asset Study.

Appendix

Data Sources and Explanations[1]

- US Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.
- Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month “as reported” earnings.
- Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month “as reported” earnings.
- Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years
- Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs
- Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.
- REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.
- Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index.

[1] All Data as of September 30, 2019 unless otherwise noted.

Appendix

Data Sources and Explanations[1]

- EM Debt Spreads – Source: Bloomberg, and Meketa Investment Group. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.
- Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.
- Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.
- Systemic Risk and Volatile Market Days – Source: Meketa Investment Group. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.
  - Systemic Risk, which measures risk across markets, is important because the more contagion of risk that exists between assets, the more likely it is that markets will experience volatile periods.
- Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.
- Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

[1] All Data as of September 30, 2019 unless otherwise noted.

Meketa Market Sentiment Indicator

Explanation, Construction and Q&A

Meketa has created the MIG Market Sentiment Indicator (MIG-MSI) to complement our valuation-focused 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 appendix explores:

- What is the Meketa Market Sentiment Indicator?
- How do I read the indicator graph?
- How is the Meketa Market Sentiment Indicator constructed?
- What do changes in the indicator mean?

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

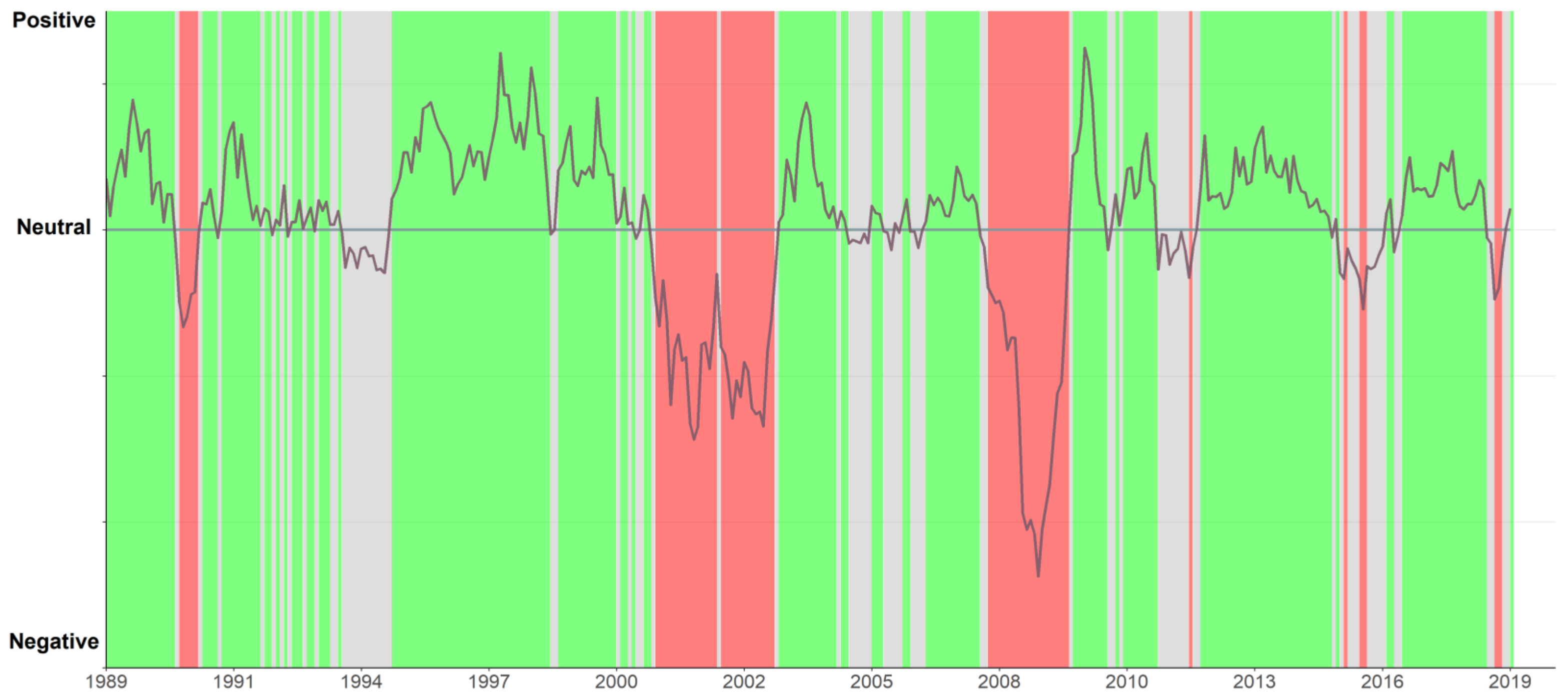
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The MIG-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 MIG-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 MIG-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 MIG-MSI:

What is the Meketa Market Sentiment Indicator (MIG-MSI)?

- The MIG-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 MIG-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 Meketa Market Sentiment Indicator graph?

- Simply put, the MIG-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 MIG-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 MIG-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 Meketa Market Sentiment Indicator (MIG-MSI) Constructed?

- The MIG-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 US Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight).
  - Both measures are converted to Z-scores and then combined to get an "apples to apples" comparison without the need of re-scaling.
- 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.
" Time Series Momentum" Moskowitz, Ooi, Pedersen, August 2010. *http://pages.stern.nyu.edu/~lpederse/papers/TimeSeriesMomentum.pdf*

What does the Meketa Market Sentiment Indicator (MIG-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 MIG-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.

This page intentionally left blank.

TAB I

Report

Comprehensive Performance Report

September 30, 2019

This page intentionally left blank.

Comprehensive Performance Report

September 30, 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

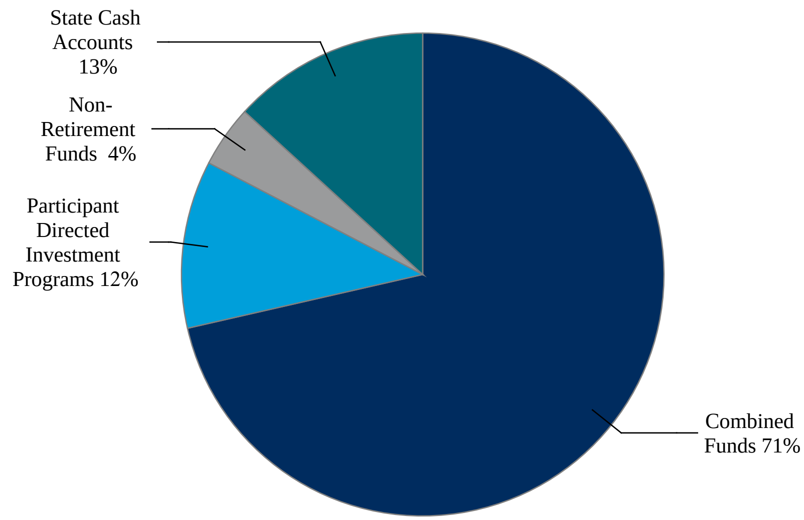
The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

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	$70,691
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	2,928
Mutual Funds**	7,188
Minnesota College Savings Plan	1,493
Achieve a Better Life Experience	7
NON-RETIREMENT FUNDS	
Assigned Risk Plan	288
Permanent School Fund	1,544
Environmental Trust Fund	1,232
Closed Landfill Investment Fund	99
Miscellaneous	263
Other Post Employment Benefits Accounts	668
STATE CASH ACCOUNTS	
Treasurer's Cash	12,911
Other State Cash Accounts	166
TOTAL	
SBI AUM	99,478



* 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 Mutual Funds and Supplemental Investment Fund

Note: Differentials within column amounts may occur due to rounding

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.

Combined Funds

September 30, 2019

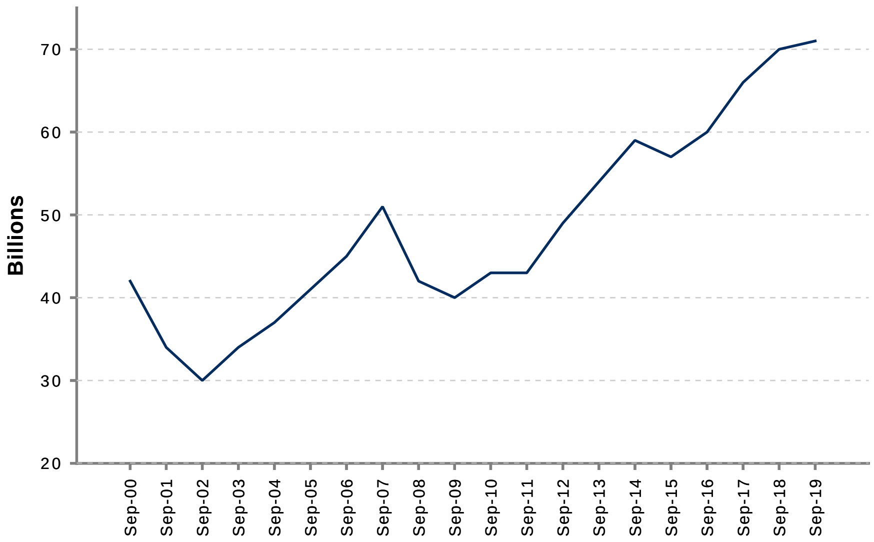
Combined Funds Summary

Combined Funds Change in Market Value ($Millions)

	One Quarter
COMBINED FUNDS	
Beginning Market Value	$70,658
Net Contributions	-655
Investment Return	687
Ending Market Value	70,691

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

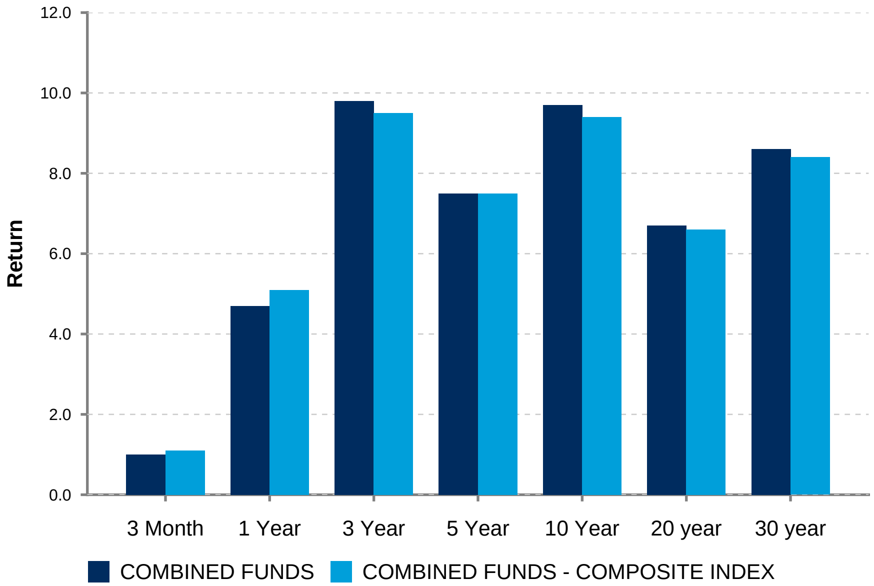
Asset Growth



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	1.0%	1.0%	4.7%	9.8%	7.5%	9.7%	6.7%	8.6%
COMBINED FUNDS - COMPOSITE INDEX	1.1	1.1	5.1	9.5	7.5	9.4	6.6	8.4
Excess	-0.1	-0.1	-0.4	0.2	0.0	0.3	0.2	0.2

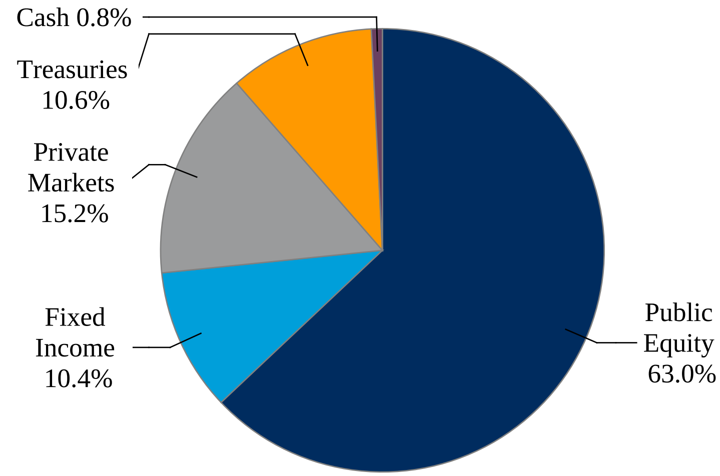


Combined Funds Summary

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.

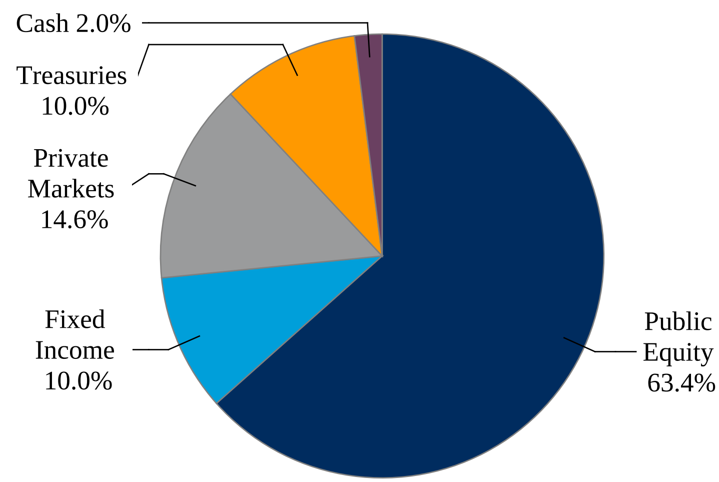
	(Millions)	Actual Mix	Policy Target
Public Equity	$44,485	62.9%	53.0%
Fixed Income	7,386	10.4	10.0
Private Markets	10,751	15.2	25.0
Treasuries	7,492	10.6	10.0
Cash	577	0.8	2.0
TOTAL	70,691	100.0	



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	63.5%	Public Equity Benchmark
Fixed Income	10.0	BB Barclays U.S. Aggregate
Private Markets	14.6	Private Markets
Treasuries	10.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills



Combined Funds Asset Class Performance Summary

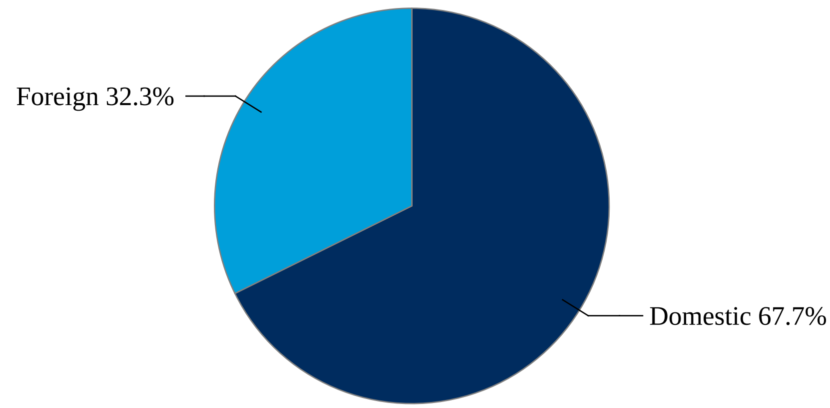
Public Equity

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 approximately 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 approximately 85% of the total market capitalization across 24 Emerging Markets countries.



	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Public Equity	0.0%	0.0%	1.1%	10.9%	8.3%	10.9%	5.9%	8.8%
Public Equity Benchmark	0.1	0.1	1.5	10.8				
Excess	-0.1	-0.1	-0.4	0.1				
Domestic Equity	0.8	0.8	2.1	12.8	10.1	13.0	6.4	9.3
Domestic Equity Benchmark	1.0	1.0	2.8	12.8	10.4	13.1	6.6	9.5
Excess	-0.3	-0.3	-0.7	0.1	-0.3	-0.1	-0.2	-0.2
International Equity	-1.5	-1.5	-0.9	6.4	3.4	5.0	4.6	
International Equity Benchmark	-1.8	-1.8	-1.2	6.4	2.9	4.5	4.2	
Excess	0.3	0.3	0.2	0.1	0.5	0.5	0.4	

Note:

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

Combined Funds Asset Class Performance Summary

Fixed Income

The Combined Funds Fixed Income 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	2.3%	2.3%	10.4%	3.5%	3.8%	4.6%	5.4%	6.4%
Fixed Income Benchmark	2.3	2.3	10.3	2.9	3.4	3.7	5.0	6.1
Excess	0.1	0.1	0.1	0.5	0.5	0.9	0.4	0.4
Treasuries	4.5	4.5	17.0					
BBG BARC 5Y + Us Tsy Idx	4.6	4.6	17.2					
Excess	-0.1	-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%	0.6%	2.4%	1.7%	1.1%	0.8%	2.2%	3.7%
90 DAY T-Bill	0.6	0.6	2.4	1.5	1.0	0.5	1.8	3.0

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	1.8%	1.8%	8.0%	13.7%	9.5%	12.6%	12.5%	13.7%	12.2%
Private Equity	3.5%	3.5%	12.8%	17.4%	14.3%	15.5%	13.3%	15.6%	
Private Credit	1.4	1.4	7.5	13.0	12.7	13.4	12.3		
Resources	-3.5	-3.5	-5.3	5.2	-4.8	5.9	14.9	14.4	
Real Estate	3.1	3.1	9.6	10.5	11.0	10.1	9.0	9.6	

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
September 30, 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

September 30, 2019

Total Domestic Equity

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
ACTIVE DOMESTIC EQUITY AGGREGATE (1)	**$4,503,088,009**	**14.7%**	**-2.5%**	**-2.5%**	**-5.2%**	**11.4%**	**8.8%**	**12.2%**		
Active Domestic Equity Benchmark			-0.3	-0.3	-2.6	10.7	9.2	12.3		
Excess			-2.2	-2.2	-2.5	0.8	-0.4	-0.1		
SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)	**2,513,932,512**	**8.2**	**1.2**	**1.2**	**3.3**	**13.3**	**10.5**	**13.3**		
Semi Passive Domestic Equity Benchmark			1.4	1.4	3.9	13.2	10.6	13.2		
Excess			-0.2	-0.2	-0.5	0.1	-0.1	0.1		
PASSIVE DOMESTIC EQUITY AGGREGATE (3)	**23,590,546,994**	**77.1**	**1.4**	**1.4**	**3.5**	**13.0**	**10.6**	**13.1**		
Passive Domestic Equity Benchmark			1.3	1.3	3.5	13.1	10.6	13.1		
Excess			0.0	0.0	0.0	-0.0	-0.0	0.0		
TRANSITION AGGREGATE DOMESTIC EQUITY (4)	15,471	0.0								
TOTAL DOMESTIC EQUITY (5)	**30,607,582,986**	**100.0**	**0.8**	**0.8**	**2.1**	**12.8**	**10.1**	**13.0**	**10.4**	**01/1984**
Domestic Equity Benchmark			1.0	1.0	2.8	12.8	10.4	13.1	10.6	01/1984
Excess			-0.3	-0.3	-0.6	0.1	-0.3	-0.1	-0.2	

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

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

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

Total Domestic Equity

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
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.

	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	**$470,299,932**	**1.5%**	**-5.0%**	**-5.0%**	**-0.3%**	**17.5%**	**11.7%**	**16.7%**	**11.0%**	**01/2005**
Russell 1000 Growth			1.5	1.5	3.7	16.9	13.4	14.9	9.9	01/2005
Excess			-6.5	-6.5	-4.0	0.6	-1.7	1.7	1.1	
WINSLOW	**268,997,045**	**0.9**	**-0.3**	**-0.3**	**3.3**	**18.0**	**13.5**	**14.6**	**10.7**	**01/2005**
Russell 1000 Growth			1.5	1.5	3.7	16.9	13.4	14.9	9.9	01/2005
Excess			-1.8	-1.8	-0.4	1.1	0.1	-0.3	0.8	
ZEVENBERGEN	**411,243,978**	**1.3**	**-11.1**	**-11.1**	**-5.2**	**18.7**	**11.7**	**14.4**	**10.7**	**04/1994**
Russell 1000 Growth			1.5	1.5	3.7	16.9	13.4	14.9	9.8	04/1994
Excess			-12.6	-12.6	-8.9	1.8	-1.7	-0.5	0.9	
RUSSELL 1000 GROWTH AGGREGATE	**1,150,540,956**	**3.8**	**-6.3**	**-6.3**	**-1.4**	**18.7**	**13.5**	**15.4**		
Russell 1000 Growth			1.5	1.5	3.7	16.9	13.4	14.9		
Excess			-7.8	-7.8	-5.1	1.8	0.1	0.5		

	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	**$432,053,752**	**1.4%**	**3.9%**	**3.9%**	**5.2%**	**11.0%**	**8.3%**	**12.0%**	**8.2%**	**04/2004**
Russell 1000 Value			1.4	1.4	4.0	9.4	7.8	11.5	7.7	04/2004
Excess			2.5	2.5	1.2	1.5	0.5	0.6	0.5	
EARNEST PARTNERS	**295,288,574**	**1.0**	**-0.5**	**-0.5**	**1.2**	**12.1**	**9.3**	**11.2**	**7.0**	**07/2000**
Russell 1000 Value			1.4	1.4	4.0	9.4	7.8	11.5	7.2	07/2000
Excess			-1.9	-1.9	-2.8	2.7	1.5	-0.3	-0.2	
LSV	**392,258,249**	**1.3**	**1.5**	**1.5**	**-0.8**	**10.2**	**7.8**	**12.2**	**8.7**	**04/2004**
Russell 1000 Value			1.4	1.4	4.0	9.4	7.8	11.5	7.7	04/2004
Excess			0.1	0.1	-4.8	0.8	-0.0	0.8	1.0	
RUSSELL 1000 VALUE AGGREGATE	**1,119,600,575**	**3.7**	**1.8**	**1.8**	**1.9**	**11.2**	**8.1**	**11.7**		
Russell 1000 Value			1.4	1.4	4.0	9.4	7.8	11.5		
Excess			0.5	0.5	-2.1	1.8	0.3	0.2		

STATE STREET

	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.

Semi-Passive Large Cap

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
BLACKROCK	**$1,136,709,652**	**3.7%**	**0.9%**	**0.9%**	**3.1%**	**14.4%**	**11.4%**	**13.7%**	**10.0%**	**01/1995**
Semi Passive Domestic Equity Benchmark			1.4	1.4	3.9	13.2	10.6	13.2	9.5	01/1995
Excess			-0.5	-0.5	-0.8	1.3	0.8	0.5	0.4	
J.P. MORGAN	**1,377,222,860**	**4.5**	**1.4**	**1.4**	**3.6**	**13.1**	**10.6**	**13.5**	**9.8**	**01/1995**
Semi Passive Domestic Equity Benchmark			1.4	1.4	3.9	13.2	10.6	13.2	9.5	01/1995
Excess			0.0	0.0	-0.3	-0.1	-0.0	0.3	0.3	
SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE	**2,513,932,512**	**8.2**	**1.2**	**1.2**	**3.3**	**13.3**	**10.5**	**13.3**		
Semi Passive Domestic Equity Benchmark			1.4	1.4	3.9	13.2	10.6	13.2		
Excess			-0.2	-0.2	-0.5	0.1	-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

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Small Cap Growth										
ARROWMARK	**$221,490,258**	**0.7%**	**-4.8%**	**-4.8%**	**-12.9%**				**14.2%**	**11/2016**
Russell 2000 Growth			-4.2	-4.2	-9.6				12.5	11/2016
Excess			-0.6	-0.6	-3.2				1.6	
HOOD RIVER	**243,015,418**	**0.8**	**-8.6**	**-8.6**	**-14.3**				**11.9**	**11/2016**
Russell 2000 Growth			-4.2	-4.2	-9.6				12.5	11/2016
Excess			-4.4	-4.4	-4.6				-0.7	
RICE HALL JAMES	**216,411,225**	**0.7**	**-4.6**	**-4.6**	**-16.2**				**13.3**	**11/2016**
Russell 2000 Growth			-4.2	-4.2	-9.6				12.5	11/2016
Excess			-0.5	-0.5	-6.6				0.7	
WELLINGTON	**251,586,164**	**0.8**	**-2.9**	**-2.9**	**-6.8**				**13.2**	**11/2016**
Russell 2000 Growth			-4.2	-4.2	-9.6				12.5	11/2016
Excess			1.3	1.3	2.8				0.7	
RUSSELL 2000 GROWTH AGGREGATE	**932,503,064**	**3.0**	**-5.3**	**-5.3**	**-12.5**	**9.9**	**7.8**	**10.8**		
Russell 2000 Growth			-4.2	-4.2	-9.6	9.8	9.1	12.2		
Excess			-1.1	-1.1	-2.9	0.1	-1.3	-1.5		

STATE STREET.

	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	**$363,291,600**	**1.2%**	**-0.9%**	**-0.9%**	**-5.2%**	**7.6%**	**7.5%**	**12.2%**	**9.0%**	**01/2004**
Russell 2000 Value			-0.6	-0.6	-8.2	6.5	7.2	10.1	7.4	01/2004
Excess			-0.3	-0.3	3.0	1.1	0.3	2.1	1.6	
HOTCHKIS AND WILEY	**292,092,105**	**1.0**	**-2.0**	**-2.0**	**-12.4**	**6.3**	**4.2**	**11.7**	**7.5**	**01/2004**
Russell 2000 Value			-0.6	-0.6	-8.2	6.5	7.2	10.1	7.4	01/2004
Excess			-1.4	-1.4	-4.1	-0.3	-2.9	1.7	0.1	
MARTINGALE	**282,847,523**	**0.9**	**-0.3**	**-0.3**	**-9.2**	**5.4**	**7.4**	**11.4**	**7.3**	**01/2004**
Russell 2000 Value			-0.6	-0.6	-8.2	6.5	7.2	10.1	7.4	01/2004
Excess			0.3	0.3	-0.9	-1.1	0.2	1.4	-0.1	
PEREGRINE	**362,212,187**	**1.2**	**0.8**	**0.8**	**-8.1**	**7.1**	**7.0**	**10.9**	**9.6**	**07/2000**
Russell 2000 Value			-0.6	-0.6	-8.2	6.5	7.2	10.1	9.0	07/2000
Excess			1.4	1.4	0.1	0.5	-0.2	0.9	0.6	
RUSSELL 2000 VALUE AGGREGATE	**1,300,443,414**	**4.2**	**-0.6**	**-0.6**	**-8.6**	**6.7**	**6.5**	**11.5**		
Russell 2000 Value			-0.6	-0.6	-8.2	6.5	7.2	10.1		
Excess			0.0	0.0	-0.3	0.1	-0.6	1.4		

STATE STREET.

	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

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total Passive Domestic Equity										
BLACKROCK RUSSELL 1000	**$21,578,916,848**	**70.5%**	**1.5%**	**1.5%**	**3.9%**				**14.4%**	**11/2016**
Russell 1000			1.4	1.4	3.9				14.4	11/2016
Excess			0.0	0.0	0.0				-0.0	
BLACKROCK RUSSELL 2000	**579,903,897**		**-2.4**	**-2.4**					**2.3**	**11/2018**
RUSSELL 2000 (DAILY)			-2.4	-2.4					2.2	11/2018
Excess			-0.0	-0.0					0.1	
BLACKROCK RUSSELL 3000 (1)	**1,431,726,249**	**4.7**	**1.2**	**1.2**	**3.0**	**12.9%**	**10.5%**	**13.1%**	**9.3**	**07/1995**
Passive Manager Benchmark			1.2	1.2	2.9	12.8	10.4	13.1	9.2	07/1995
PASSIVE DOMESTIC EQUITY AGGREGATE	**23,590,546,994**	**77.1**	**1.4**	**1.4**	**3.5**	**13.0**	**10.6**	**13.1**		
Passive Domestic Equity Benchmark			1.3	1.3	3.5	13.1	10.6	13.1		
Excess			0.0	0.0	0.0	-0.0	-0.0	0.0		

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

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

September 30, 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)	**$10,953,033,062**	**75.5%**	**-1.0%**	**-1.0%**	**-1.0%**	**6.7%**	**3.7%**	**5.5%**		
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8		
Excess			-0.0	-0.0	-0.0	0.2	0.6	0.8		
EMERGING MARKETS (2)	**3,560,002,323**	**24.5**	**-3.1**	**-3.1**	**-0.2**	**5.5**	**2.3**	**3.0**		
BENCHMARK EM			-4.2	-4.2	-2.0	6.0	2.3	3.4		
Excess			1.2	1.2	1.8	-0.5	-0.1	-0.4		
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)	1,303,316	0.0								
TOTAL INTERNATIONAL EQUITY (4)	**14,514,338,702**	**100.0**	**-1.5**	**-1.5**	**-0.9**	**6.4**	**3.4**	**5.0**	**6.3**	**10/1992**
International Equity Benchmark			-1.8	-1.8	-1.2	6.4	2.9	4.5	5.8	10/1992
Excess			0.3	0.3	0.2	0.0	0.5	0.5	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.

	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	**$382,471,159**	**2.6%**	**-1.2%**	**-1.2%**	**-5.1%**	**9.9%**	**7.3%**	**7.8%**	**6.2%**	**07/2005**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	4.7	07/2005
Excess			-0.3	-0.3	-4.1	3.4	4.3	3.0	1.5	
COLUMBIA	**355,354,230**	**2.4**	**-0.7**	**-0.7**	**1.7**	**9.0**	**5.9**	**6.8**	**3.0**	**03/2000**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	3.3	03/2000
Excess			0.3	0.3	2.6	2.5	2.8	2.1	-0.3	
FIDELITY	**383,112,880**	**2.6**	**-1.2**	**-1.2**	**0.2**	**7.7**	**4.5**	**6.4**	**6.2**	**07/2005**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	4.7	07/2005
Excess			-0.3	-0.3	1.1	1.2	1.4	1.6	1.5	
JP MORGAN	**264,763,077**	**1.8**	**-1.3**	**-1.3**	**2.6**	**8.2**	**3.7**	**5.3**	**4.9**	**07/2005**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	4.7	07/2005
Excess			-0.4	-0.4	3.6	1.7	0.6	0.6	0.3	
MARATHON	**455,854,184**	**3.1**	**-0.6**	**-0.6**	**-2.2**	**6.0**	**4.4**	**6.9**	**7.8**	**11/1993**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	4.9	11/1993
Excess			0.4	0.4	-1.3	-0.5	1.3	2.1	2.9	
MCKINLEY	**260,257,397**	**1.8**	**-1.9**	**-1.9**	**-3.2**	**6.6**	**3.7**	**5.8**	**4.5**	**07/2005**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	4.7	07/2005
Excess			-0.9	-0.9	-2.2	0.2	0.6	1.0	-0.2	
ACTIVE DEVELOPED MARKETS AGGREGATE	**2,101,812,926**	**14.5**	**-1.1**	**-1.1**	**-1.2**	**7.8**	**5.0**	**6.5**		
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8		
Excess			-0.1	-0.1	-0.2	1.3	1.9	1.7		

STATE STREET.

	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	**$334,572,161**	**2.3%**	**-2.8%**	**-2.8%**	**-5.0%**	**4.1%**	**2.4%**	**5.0%**	**4.7%**	**07/2005**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	4.7	07/2005
Excess			-1.9	-1.9	-4.0	-2.4	-0.7	0.2	0.0	
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**334,572,161**	**2.3**	**-2.8**	**-2.8**	**-5.0**	**3.5**	**1.4**	**4.3**		
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8		
Excess			-1.9	-1.9	-4.0	-3.0	-1.7	-0.5		

STATE STREET

	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.

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total Developed Markets										
ACTIVE DEVELOPED MARKETS AGGREGATE	**$2,101,812,926**	**14.5%**	**-1.1%**	**-1.1%**	**-1.2%**	**7.8%**	**5.0%**	**6.5%**		
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8		
Excess			-0.1	-0.1	-0.2	1.3	1.9	1.7		
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**334,572,161**	**2.3**	**-2.8**	**-2.8**	**-5.0**	**3.5**	**1.4**	**4.3**		
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8		
Excess			-1.9	-1.9	-4.0	-3.0	-1.7	-0.5		
SSgA DEVELOPED MARKETS PASSIVE	**8,516,647,975**	**58.7**	**-0.9**	**-0.9**	**-0.7**	**6.8**	**3.5**	**5.2**	**6.1**	**10/1992**
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8	5.7	10/1992
Excess			0.1	0.1	0.3	0.3	0.4	0.4	0.3	
DEVELOPED MARKETS TOTAL	**10,953,033,062**	**75.5**	**-1.0**	**-1.0**	**-1.0**	**6.7**	**3.7**	**5.5**		
BENCHMARK DM			-0.9	-0.9	-0.9	6.5	3.1	4.8		
Excess			-0.0	-0.0	-0.0	0.2	0.6	0.8		

	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	**$303,780,164**	**2.1%**	**-2.4%**	**-2.4%**	**3.7%**				**5.9%**	**04/2017**
MSCI EMERGING MARKETS			-4.2	-4.2	-2.0				4.4	04/2017
Excess			1.9	1.9	5.7				1.4	
MARTIN CURRIE	**329,928,997**	**2.3**	**-2.0**	**-2.0**	**1.4**				**8.3**	**04/2017**
BENCHMARK EM			-4.2	-4.2	-2.0				4.4	04/2017
Excess			2.3	2.3	3.4				3.8	
MACQUARIE	**313,190,539**	**2.2**	**-1.4**	**-1.4**	**-0.8**				**5.9**	**04/2017**
BENCHMARK EM			-4.2	-4.2	-2.0				4.4	04/2017
Excess			2.9	2.9	1.2				1.5	
MORGAN STANLEY	**593,872,530**	**4.1**	**-2.2**	**-2.2**	**2.0**	**4.6%**	**2.6%**	**4.1%**	**9.0**	**01/2001**
BENCHMARK EM			-4.2	-4.2	-2.0	6.0	2.3	3.4	8.7	01/2001
Excess			2.1	2.1	4.0	-1.4	0.2	0.7	0.3	
NEUBERGER BERMAN	**310,268,067**	**2.1**	**-2.5**	**-2.5**	**2.8**				**5.6**	**04/2017**
BENCHMARK EM			-4.2	-4.2	-2.0				4.4	04/2017
Excess			1.8	1.8	4.8				1.1	
PZENA	**279,980,978**	**1.9**	**-5.6**	**-5.6**	**-6.4**				**1.7**	**04/2017**
BENCHMARK EM			-4.2	-4.2	-2.0				4.4	04/2017
Excess			-1.3	-1.3	-4.3				-2.7	
ROCK CREEK	**288,584,421**	**2.0**	**-2.1**	**-2.1**	**1.2**				**2.9**	**04/2017**
BENCHMARK EM			-4.2	-4.2	-2.0				4.4	04/2017
Excess			2.2	2.2	3.2				-1.6	

STATE STREET

Active Emerging Markets

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
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	**$2,419,605,695**	**16.7%**	**-2.5%**	**-2.5%**	**0.7%**	**4.9%**	**2.0%**	**2.8%**		
BENCHMARK EM			-4.2	-4.2	-2.0	6.0	2.3	3.4		
Excess			1.7	1.7	2.7	-1.1	-0.4	-0.5		
SSGA EMERGING MARKETS PASSIVE	**1,140,396,628**	**7.9**	**-4.3**	**-4.3**	**-2.2**	**5.8**	**2.4**		**3.7**	**01/2012**
BENCHMARK EM			-4.2	-4.2	-2.0	6.0	2.3		3.7	01/2012
Excess			-0.1	-0.1	-0.2	-0.2	0.1		0.1	
EMERGING MARKETS TOTAL	**3,560,002,323**	**24.5**	**-3.1**	**-3.1**	**-0.2**	**5.5**	**2.3**	**3.0**		
BENCHMARK EM			-4.2	-4.2	-2.0	6.0	2.3	3.4		
Excess			1.2	1.2	1.8	-0.5	-0.1	-0.4		

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
September 30, 2019

Total Fixed Income

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
ACTIVE FIXED INCOME AGGREGATE	**$4,260,872,681**	**56.2%**	**2.2%**	**2.2%**	**10.3%**	**3.8%**	**4.1%**	**5.0%**		
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7		
Excess			-0.1	-0.1	0.0	0.9	0.7	1.2		
SEMI PASSIVE FIXED INCOME AGGREGATE	**3,314,764,904**	**43.8**	**2.5**	**2.5**	**10.6**	**3.1**	**3.6**	**4.2**		
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7		
Excess			0.2	0.2	0.3	0.2	0.2	0.5		
TRANSITION AGGREGATE FIXED INCOME (1)	18,272	0.0								
TOTAL FIXED INCOME (2)	**7,575,655,857**	**100.0**	**2.3**	**2.3**	**10.4**	**3.5**	**3.8**	**4.6**	**7.5**	**07/1984**
Fixed Income Benchmark			2.3	2.3	10.3	2.9	3.4	3.7	7.2	07/1984
Excess			0.0	0.0	0.1	0.5	0.4	0.8	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.

Minnesota State Board of Investment
Quarter Ending September 30, 2019
Fixed Income Managers

Active Fixed Income Managers	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
COLUMBIA	**$1,088,302,108**	**14.4%**	**2.5%**	**2.5%**	**11.3%**	**4.2%**	**4.4%**	**4.9%**	**5.5%**	**07/1993**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	5.3	07/1993
Excess			0.2	0.2	1.0	1.3	1.0	1.1	0.2	
DODGE & COX	**1,076,188,981**	**14.2**	**2.1**	**2.1**	**9.2**	**3.8**	**3.8**	**4.8**	**6.1**	**02/2000**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	5.1	02/2000
Excess			-0.2	-0.2	-1.1	0.9	0.4	1.1	0.9	
PIMCO	**968,711,485**	**12.8**	**1.6**	**1.6**	**9.7**	**3.2**	**3.7**	**4.7**	**5.6**	**10/2008**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	4.3	10/2008
Excess			-0.7	-0.7	-0.6	0.3	0.3	1.0	1.2	
WESTERN	**1,127,670,107**	**14.9**	**2.6**	**2.6**	**11.2**	**4.2**	**4.5**	**5.4**	**8.4**	**07/1984**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	7.2	07/1984
Excess			0.4	0.4	0.9	1.2	1.1	1.6	1.1	
ACTIVE FIXED INCOME AGGREGATE	**4,260,872,681**	**56.2**	**2.2**	**2.2**	**10.3**	**3.8**	**4.1**	**5.0**		
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7		
Excess			-0.1	-0.1	0.0	0.9	0.7	1.2		

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	**$1,086,983,879**	**14.3%**	**2.3%**	**2.3%**	**10.6%**	**3.1%**	**3.5%**	**4.0%**	**5.3%**	**04/1996**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	5.2	04/1996
Excess			0.0	0.0	0.3	0.1	0.2	0.2	0.1	
GOLDMAN SACHS	**1,198,641,828**	**15.8**	**2.7**	**2.7**	**10.7**	**3.3**	**3.7**	**4.3**	**5.6**	**07/1993**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	5.3	07/1993
Excess			0.4	0.4	0.4	0.4	0.3	0.6	0.3	
NEUBERGER	**1,029,139,197**	**13.6**	**2.4**	**2.4**	**10.4**	**3.0**	**3.5**	**4.3**	**6.4**	**07/1988**
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7	6.2	07/1988
Excess			0.1	0.1	0.1	0.1	0.1	0.5	0.2	
SEMI PASSIVE FIXED INCOME	**3,314,764,904**	**43.8**	**2.5**	**2.5**	**10.6**	**3.1**	**3.6**	**4.2**		
BBG BARC Agg (Dly)			2.3	2.3	10.3	2.9	3.4	3.7		
Excess			0.2	0.2	0.3	0.2	0.2	0.5		

	2018 Calendar Return	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return
Semi Passive Fixed Income Managers					
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
September 30, 2019

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Treasuries Managers										
BLACKROCK	**$2,497,438,632**	**33.3%**	**4.5%**	**4.5%**	**17.0%**				**9.0%**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			4.6	4.6	17.2				9.2	02/2018
Excess			-0.1	-0.1	-0.2				-0.2	
GOLDMAN SACHS	**2,487,105,330**	**33.2**	**4.6**	**4.6**	**17.1**				**9.2**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			4.6	4.6	17.2				9.2	02/2018
Excess			0.0	0.0	-0.0				-0.0	
NEUBERGER	**2,507,012,929**	**33.5**	**4.5**	**4.5**	**16.9**				**9.0**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			4.6	4.6	17.2				9.2	02/2018
Excess			-0.1	-0.1	-0.3				-0.2	
TREASURIES TRANSITION ACCOUNT	0	0.0								03/2018
TOTAL TREASURIES	**7,491,556,892**	**100.0**	**4.5**	**4.5**	**17.0**				**9.1%**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			4.6	4.6	17.2				9.2%	02/2018
Excess			-0.1	-0.1	-0.2				-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
September 30, 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	1.8%	1.8%	8.0%	13.7%	9.5%	12.6%	12.5%	13.7%	12.2%
Private Equity	3.5%	3.5%	12.8%	17.4%	14.3%	15.5%	13.3%	15.6%	
Private Credit	1.4	1.4	7.5	13.0	12.7	13.4	12.3		
Resources	-3.5	-3.5	-5.3	5.2	-4.8	5.9	14.9	14.4	
Real Estate	3.1	3.1	9.6	10.5	11.0	10.1	9.0	9.6	

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 September 30, 2019

Investment	Total Commitment	Total Contribution	Market Value	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	52,015,542	41,408,361	23,470,250	6.14	1.22	**7.03**
Adams Street Global Secondary Fund 6	100,000,000	16,200,000	18,780,613	1,214,007	83,800,000	54.25	1.23	**2.25**
Advent International								
Advent International GPE VI	50,000,000	52,993,313	7,933,114	100,573,095	0	16.87	2.05	**11.25**
Advent International GPE VII	90,000,000	84,690,641	73,745,247	76,856,730	5,400,000	15.66	1.78	**6.79**
Advent International GPE VIII	100,000,000	86,850,000	106,249,598	0	13,150,000	13.21	1.22	**3.40**
Advent International GPE IX	115,000,000	0	0	0	115,000,000	0.00	0.00	**0.39**
Affinity Ventures								
Affinity Ventures IV	4,000,000	4,000,000	361,670	1,541,970	0	-14.95	0.48	**15.01**
Affinity Ventures V	5,000,000	5,000,000	2,121,226	1,706,245	0	-4.64	0.77	**11.00**
APAX Partners								
Apax VIII - USD	200,000,000	222,011,295	141,509,235	211,796,833	14,644,515	14.63	1.59	**6.32**
Apax IX - USD	150,000,000	86,568,051	117,492,466	3,944,404	67,376,353	23.54	1.40	**3.11**
Apax X - USD	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.23**
Arsenal Capital Partners								
Arsenal Fund V	75,000,000	20,164,317	20,164,317	0	54,835,683	0.00	1.00	**0.49**
Asia Alternatives								
Asia Alternatives Capital Partners V	96,665,054	17,377,924	12,937,036	326,117	79,605,084	-27.91	0.76	**2.00**
Banc Fund								
Banc Fund VIII	98,250,000	98,250,000	61,930,663	153,857,973	0	13.56	2.20	**11.19**
Banc Fund IX	107,205,932	107,205,932	115,345,006	18,611,685	0	7.55	1.25	**5.06**
Banc Fund X	71,110,909	28,538,182	27,921,072	0	42,572,727	-3.54	0.98	**1.16**
BlackRock								
BlackRock Long Term Capital	250,000,000	128,286,877	128,286,877	0	121,713,123	0.00	1.00	**0.50**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Blackstone Capital Partners								
Blackstone Capital Partners IV	70,000,000	84,459,884	1,721,294	200,025,244	1,832,302	37.03	2.39	**16.98**
Blackstone Capital Partners V	140,000,000	152,325,955	5,100,832	238,264,005	7,027,560	7.92	1.60	**13.41**
Blackstone Capital Partners VI	100,000,000	104,518,803	78,340,918	87,974,033	12,389,605	12.57	1.59	**10.94**
Blackstone Capital Partners VII	130,000,000	89,489,563	98,133,014	7,981,220	51,474,478	14.71	1.19	**4.00**
Blackstone Capital Partners VIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.50**
Blackstone Strategic Partners (CSFB/ DLJ)								
Strategic Partners III VC	25,000,000	25,019,448	2,829,063	31,323,081	1,047,970	6.03	1.37	**14.09**
Strategic Partners III-B	100,000,000	79,537,463	4,110,729	114,637,090	14,895,771	6.37	1.49	**14.09**
Strategic Partners IV VC	40,500,000	41,489,742	9,311,873	54,099,011	2,391,934	9.28	1.53	**11.27**
Strategic Partners IV-B	100,000,000	99,100,187	9,003,992	144,758,273	17,715,448	12.20	1.55	**11.04**
Strategic Partners V	100,000,000	84,263,725	18,417,161	117,583,009	37,827,176	18.99	1.61	**7.87**
Strategic Partners VI	150,000,000	96,292,764	48,711,920	93,745,559	59,624,500	16.80	1.48	**5.21**
Strategic Partners VII	150,000,000	95,173,160	104,150,009	22,229,494	68,279,185	21.34	1.33	**2.52**
Strategic Partners VIII	150,000,000	17,626,243	18,307,445	0	132,373,757	11.19	1.04	**0.75**
Bridgepoint								
Bridgepoint Europe VI	163,967,495	22,600,015	20,153,221	0	141,367,480	-23.88	0.89	**1.28**
Brookfield Asset Management								
Brookfield Capital Partners Fund IV	100,000,000	90,760,734	93,067,996	110,229,853	27,499,345	57.27	2.24	**3.80**
Brookfield Capital Partners V	250,000,000	29,176,174	25,622,925	0	220,823,826	-12.18	0.88	**0.93**
Cardinal Partners								
DSV Partners IV	10,000,000	10,000,000	30,849	39,196,082	0	10.61	3.92	**34.51**
Carlyle Group								
Carlyle Partners VII	150,000,000	36,396,572	32,603,327	102,703	113,706,131	-19.24	0.90	**1.54**
Chicago Growth Partners (William Blair)								
William Blair Capital Partners VII	50,000,000	48,150,000	1,075,176	69,201,191	1,650,000	8.60	1.46	**18.32**
Chicago Growth Partners I	50,000,000	52,441,998	1,865,244	54,532,745	300,000	1.70	1.08	**13.94**
Chicago Growth Partners II	60,000,000	58,347,626	3,406,479	121,871,703	1,652,374	19.74	2.15	**11.31**
Court Square Capital Partners								
Court Square Capital Partners II	175,000,000	170,186,067	17,788,826	293,299,965	16,189,027	12.87	1.83	**12.82**
Court Square Capital Partners III	175,000,000	181,075,938	178,607,832	91,142,790	13,078,975	17.82	1.49	**7.08**
Court Square Capital Partners IV	150,000,000	0	0	0	150,000,000	0.00	0.00	**1.14**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Crescendo								
Crescendo IV	101,500,000	103,101,226	3,153,357	55,121,736	0	-4.62	0.57	**19.32**
CVC Capital Partners								
CVC European Equity Partners V	133,873,328	153,813,045	18,207,579	271,080,835	1,557,066	16.47	1.88	**11.27**
CVC Capital Partners VI	256,095,550	255,492,099	239,740,683	115,796,003	49,417,991	14.07	1.39	**5.98**
Elevation Partners								
Elevation Partners	75,000,000	73,237,580	144,197	113,492,106	799,634	11.81	1.55	**14.13**
Glouston Capital Partners**								
Glouston Private Equity Opportunities Fund IV	5,337,098	4,378,779	1,159,479	3,606,251	1,090,000	3.66	1.09	**4.50**
Goldner Hawn Johnson & Morrison								
TrailHead Fund	20,000,000	16,070,803	30,446,110	12,806,955	3,935,813	19.92	2.69	**7.35**
Goldner Hawn Fund VII, L.P.	75,000,000	6,379,673	6,213,880	0	68,786,120	-2.60	0.97	**1.18**
GS Capital Partners								
GS Capital Partners V	100,000,000	74,319,006	1,095,946	191,435,136	1,041,099	18.26	2.59	**14.25**
GS Capital Partners VI	100,000,000	110,136,316	13,065,626	130,860,795	2,551,356	7.23	1.31	**12.41**
GS Vintage VII	100,000,000	75,764,621	71,440,371	21,679,261	46,019,327	20.06	1.23	**3.00**
West Street Capital Partners VII	150,000,000	81,153,586	75,834,600	12,491,195	80,258,025	8.13	1.09	**2.52**
GS China-US Cooperation Fund	99,800,000	10,154,445	8,035,317	0	89,820,000	-20.87	0.79	**1.12**
GTCR								
GTCR IX	75,000,000	71,414,933	204,270	128,764,150	3,585,067	13.77	1.81	**13.00**
GTCR X	100,000,000	103,907,821	18,290,964	188,421,061	6,751,396	21.21	1.99	**8.56**
GTCR XI	110,000,000	97,445,726	96,452,802	74,878,725	13,716,556	24.34	1.76	**5.62**
HarbourVest**								
Dover Street VII Cayman Fund	2,198,112	2,073,547	287,004	1,606,086	132,416	-4.37	0.91	**4.50**
HarbourVest Intl PE Partners V-Cayman US	3,515,037	3,345,135	707,222	3,671,861	174,432	13.44	1.31	**4.50**
Harbourvest Intl PE Partners VI-Cayman	4,226,947	3,999,823	3,639,855	2,552,284	228,942	14.90	1.55	**4.50**
HarbourVest Partners VIII Cayman Buyout	4,506,711	4,298,488	1,467,287	4,385,420	234,000	13.91	1.36	**4.50**
HarbourVest Partners VIII-Cayman Venture	7,190,898	7,079,986	3,882,022	5,591,718	140,000	9.89	1.34	**4.50**
Hellman & Friedman								
Hellman & Friedman Capital Partners VI	175,000,000	171,037,755	8,543,993	309,639,874	5,084,864	12.94	1.86	**12.25**
Hellman & Friedman Capital Partners VII	50,000,000	49,780,756	72,619,743	63,087,992	2,321,599	24.82	2.73	**10.20**
Hellman & Friedman Investors IX	175,000,000	0	-313,512	0	172,258,308	0.00	0.00	**1.00**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
IK Investment Partners								
IK Fund VII	179,976,867	177,217,341	169,801,985	118,317,923	8,268,372	13.38	1.63	**5.79**
IK Fund VIII	170,277,658	140,605,202	156,521,338	10,490,238	31,113,932	12.00	1.19	**2.94**
IK Fund IX	147,176,977	0	0	0	147,176,977	0.00	0.00	**0.22**
Kohlberg Kravis Roberts								
KKR Millennium Fund	200,000,000	205,167,570	178,659	424,946,028	0	16.37	2.07	**16.56**
KKR 2006 Fund	200,000,000	218,929,496	62,282,488	319,431,205	3,360,223	9.09	1.74	**12.76**
KKR Americas Fund XII	150,000,000	68,869,036	70,336,858	988,851	83,012,133	3.53	1.04	**3.32**
KKR Asian Fund III	100,000,000	45,476,787	56,147,404	0	56,586,846	32.38	1.23	**2.25**
KKR Europe V	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.90**
Leonard Green & Partners								
Green Equity Investors VI	200,000,000	216,367,988	216,924,027	150,920,889	20,125,964	15.79	1.70	**7.29**
Lexington Capital Partners								
Lexington Capital Partners VI	100,000,000	98,374,022	8,400,633	137,674,753	1,634,703	7.97	1.48	**13.52**
Lexington Capital Partners VII	200,000,000	172,466,709	49,001,283	224,787,726	38,059,995	14.65	1.59	**10.47**
Lexington Capital Partners VIII	150,000,000	130,580,881	109,523,152	60,761,397	34,927,109	17.69	1.30	**5.33**
Lexington Co-Investment Partners IV	200,000,000	138,959,268	153,867,772	8,030,822	69,071,554	15.57	1.17	**2.91**
Lexington Middle Market Investors IV	100,000,000	14,697,921	14,085,445	1,458,011	85,302,079	33.19	1.06	**2.52**
Lexington Capital Partners IX	150,000,000	0	7,320,320	0	150,000,000	0.00	0.00	**0.98**
Madison Dearborn Capital Partners								
Madison Dearborn Capital Partners VII	100,000,000	74,247,508	77,185,765	9,263,520	34,980,617	9.41	1.16	**3.53**
Neuberger Berman								
Dyal Capital Partners III	175,000,000	157,517,601	104,113,637	96,707,901	110,790,409	24.08	1.27	**4.19**
Dyal Capital Partners IV	250,000,000	12,321,852	10,164,975	7,218,453	244,666,225	34.55	1.41	**1.23**
Nordic Capital								
Nordic Capital Fund VIII	174,023,661	191,778,674	149,985,733	116,714,756	99,791,412	12.06	1.39	**5.80**
Nordic Capital Fund IX Beta	164,523,788	29,018,962	37,354,413	0	135,504,826	41.17	1.29	**2.20**
North Sky Capital**								
North Sky Capital LBO Fund III	1,070,259	720,259	319,400	730,649	350,000	15.02	1.46	**4.50**
North Sky Capital Venture Fund III	1,384,080	1,277,830	403,516	1,369,463	106,250	14.17	1.39	**4.50**
Oak Hill Capital Management, Inc.								
Oak Hill Capital Partners IV	150,000,000	111,004,648	105,307,289	28,267,962	60,791,788	27.13	1.20	**2.55**
Oak Hill Capital Partners V	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.81**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Paine Schwartz								
Paine Schwartz IV	75,000,000	55,500,176	54,674,309	14,823,737	20,572,978	9.16	1.25	**4.55**
Paine Schwartz V	150,000,000	0	-1,403,561	0	150,000,000	0.00	0.00	**1.16**
Permira								
Permira V	176,451,258	173,011,785	177,982,592	130,692,177	24,301,422	16.20	1.78	**5.50**
Permira VI	135,326,423	106,588,083	117,873,698	0	28,738,340	8.42	1.11	**2.93**
Permira VII	136,274,979	0	0	0	136,274,979	0.00	0.00	**0.33**
Public Pension Capital Management								
Public Pension Capital	150,000,000	80,038,762	84,501,812	45,529,760	80,350,177	24.47	1.62	**5.12**
RWI Ventures								
RWI Ventures I	7,603,265	7,603,265	452,827	6,122,274	0	-4.06	0.86	**13.01**
Silver Lake Partners								
Silver Lake Partners II	100,000,000	90,200,747	788,015	171,246,452	11,771,953	11.03	1.91	**15.00**
Silver Lake Partners III	100,000,000	91,883,682	20,664,310	174,273,455	10,559,311	17.92	2.12	**12.25**
Silver Lake Partners IV	100,000,000	110,963,357	131,170,350	71,937,602	5,231,461	25.38	1.83	**6.76**
Silver Lake Partners V	135,000,000	54,849,621	59,165,573	34,993	66,152,791	8.41	1.08	**2.25**
Split Rock Partners								
Split Rock Partners	50,000,000	47,890,906	4,161,082	58,794,192	2,109,094	3.36	1.31	**14.17**
Split Rock Partners II	60,000,000	59,165,000	29,186,473	47,174,545	835,000	5.42	1.29	**11.18**
Summit Partners								
Summit Partners Growth Equity Fund VIII	100,000,000	115,015,327	58,818,707	185,297,717	24,040,551	26.67	2.12	**8.16**
Summit Partners Growth Equity Fund IX	100,000,000	89,010,000	86,940,772	22,462,537	33,452,537	23.38	1.23	**3.84**
Summit Partners Growth Equity Fund X	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.57**
Thoma Bravo								
Thoma Bravo Fund XII	75,000,000	72,508,720	87,672,981	3,754,581	6,317,096	12.65	1.26	**2.81**
Thoma Bravo Fund XIII	150,000,000	54,155,519	53,533,597	606	95,844,481	-1.49	0.99	**1.25**
Thoma Cressey								
Thoma Cressey Fund VII	50,000,000	50,000,000	470,929	107,057,940	0	23.59	2.15	**18.85**
Thoma Cressey Fund VIII	70,000,000	69,577,712	455,727	202,471,763	770,000	18.27	2.92	**13.17**
Thomas H. Lee Partners								
Thomas H. Lee Equity Fund VII	100,000,000	96,384,736	102,000,042	30,607,993	12,381,626	20.30	1.38	**3.81**
Thomas H. Lee Equity Fund VIII	150,000,000	23,788,070	24,462,914	0	126,211,930	14.83	1.03	**1.25**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Thomas, McNerney & Partners								
Thomas, McNerney & Partners I	30,000,000	30,000,000	4,413,401	15,087,143	0	-6.40	0.65	**16.66**
Thomas, McNerney & Partners II	50,000,000	48,125,000	5,822,888	107,648,037	1,875,000	16.81	2.36	**13.00**
TPG Capital								
TPG Partners VII	100,000,000	91,288,032	95,634,638	20,095,779	16,303,486	13.83	1.27	**3.81**
TPG Partners VIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**1.25**
Vestar Capital Partners								
Vestar Capital Partners IV	55,000,000	55,652,024	604,802	102,273,825	57,313	14.64	1.85	**19.55**
Vestar Capital Partners V	75,000,000	76,456,520	9,851,468	90,693,238	0	3.92	1.32	**13.54**
Vestar Capital Partners VI	100,000,000	106,195,246	68,244,726	118,359,663	357,259	25.92	1.76	**7.77**
Vestar Capital Partners VII	150,000,000	26,562,663	23,376,817	0	123,437,337	-13.32	0.88	**1.54**
Warburg Pincus								
Warburg Pincus Equity Partners	100,000,000	100,000,000	388,267	163,542,253	0	10.03	1.64	**21.02**
Warburg Pincus Private Equity VIII	100,000,000	100,373,266	636,473	228,717,051	0	14.75	2.29	**17.22**
Warburg Pincus Private Equity IX	100,000,000	100,000,000	5,358,332	168,617,201	0	9.74	1.74	**13.93**
Warburg Pincus Private Equity X	150,000,000	150,000,000	63,197,860	195,328,700	0	9.25	1.72	**11.69**
Warburg Pincus Private Equity XI	200,000,000	200,299,952	169,218,915	158,971,948	0	13.69	1.64	**6.52**
Warburg Pincus Private Equity XII	131,000,000	118,096,500	130,677,080	10,325,813	12,903,500	10.91	1.19	**3.61**
Warburg Pincus China	45,000,000	42,615,000	43,735,336	5,879,250	4,320,000	12.30	1.16	**2.55**
Warburg Pincus Financial Sector	90,000,000	45,198,308	37,687,611	4,590,000	49,230,000	-9.28	0.94	**1.54**
Warburg Pincus Global Growth	250,000,000	14,959,589	13,249,198	0	234,875,000	-23.43	0.89	**0.86**
Warburg Pincus China-Southeast Asia II	50,000,000	1,750,000	1,750,000	0	48,250,000	0.00	1.00	**0.32**
Wellspring Capital Partners								
Wellspring Capital Partners VI	125,000,000	35,440,817	32,306,715	0	89,559,183	-15.34	0.91	**2.79**
Welsh, Carson, Anderson & Stowe								
Welsh, Carson, Anderson & Stowe XI	100,000,000	100,000,000	34,778,690	129,502,945	0	12.20	1.64	**10.95**
Welsh, Carson, Anderson & Stowe XII	150,000,000	125,826,129	138,566,989	55,526,905	24,173,871	22.62	1.54	**4.53**
Welsh, Carson, Anderson & Stowe XIII	250,000,000	1,833,825	0	0	248,166,175	0.00	0.00	**1.26**
Whitehorse Capital								
Whitehorse Liquidity Partners III, LP	100,000,000	26,119,595	24,179,140	1,836,675	75,820,849	-0.42	1.00	**0.50**
Windjammer Capital Investors								
Windjammer Mezzanine & Equity Fund II	66,708,861	55,215,684	61,955	84,876,800	10,139,363	8.94	1.54	**19.25**
Windjammer Senior Equity Fund III	75,000,000	62,684,411	389,001	154,618,016	13,380,380	19.54	2.47	**13.49**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Windjammer Senior Equity Fund IV	100,000,000	89,524,405	126,301,888	19,948,966	18,397,478	13.51	1.63	**7.35**
Windjammer Senior Equity Fund V	100,000,000	11,860,854	9,097,251	0	88,139,146	-55.39	0.77	**1.61**
Private Equity Total	**15,201,741,148**	**9,651,296,337**	**6,025,801,282**	**9,041,806,996**	**6,375,541,074**	**12.37**	**1.63**	
II. PRIVATE CREDIT								
Audax Group								
Audax Mezzanine Fund III	100,000,000	97,261,225	15,442,608	110,531,068	4,376,898	9.45	1.30	**9.24**
Audax Mezzanine Fund IV	100,000,000	46,595,338	30,908,632	20,589,432	58,444,663	9.28	1.11	**4.23**
BlackRock								
BlackRock Middle Market Senior Fund	97,500,000	35,789,597	36,119,720	216,530	61,710,403	2.06	1.02	**1.21**
Energy Capital Partners								
Energy Capital Credit Solutions II	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.75**
GS Mezzanine Partners								
GS Mezzanine Partners 2006	100,000,000	113,445,143	934,954	134,654,263	9,858,563	5.00	1.20	**13.24**
GS Mezzanine Partners V	150,000,000	147,704,244	1,434,390	179,089,405	37,564,028	8.98	1.22	**11.69**
Gold Hill Venture Lending								
Gold Hill Venture Lending	40,000,000	40,000,000	405,275	65,077,862	0	10.69	1.64	**14.76**
Gold Hill 2008	25,852,584	25,852,584	5,731,422	44,745,145	0	14.75	1.95	**11.00**
Kohlberg Kravis Roberts								
KKR Lending Partners II	75,000,000	86,088,481	25,044,294	76,209,869	8,802,924	8.97	1.18	**4.32**
KKR Lending Partners III	199,000,000	72,547,481	70,076,255	14,923,877	132,302,062	15.37	1.17	**2.22**
LBC Credit Partners								
LBC Credit Partners IV	100,000,000	84,849,186	63,082,575	32,923,851	37,291,029	10.66	1.13	**3.17**
LBC Credit Partners V	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.25**
Marathon								
Marathon Secured Private Strategies Fund II	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.00**
Merit Capital Partners								
Merit Mezzanine Fund IV	75,000,000	70,178,571	1,610,047	135,917,682	4,821,429	11.42	1.96	**14.55**
Merit Mezzanine Fund V	75,000,000	70,665,306	36,219,080	68,411,564	4,334,694	9.46	1.48	**9.53**
Merit Mezzanine Fund VI	100,000,000	58,328,723	67,079,372	5,783,582	41,604,478	15.30	1.25	**3.27**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Portfolio Advisors								
DLJ Investment Partners III	100,000,000	82,719,050	538,437	96,478,980	509,988	6.81	1.17	**13.03**
Prudential Capital Partners								
Prudential Capital Partners II	100,000,000	97,418,748	6,097,964	136,427,860	11,049,052	8.87	1.46	**14.01**
Prudential Capital Partners III	100,000,000	100,604,654	4,573,831	169,791,204	14,859,276	14.16	1.73	**10.21**
Prudential Capital Partners IV	100,000,000	107,228,983	60,815,327	75,727,184	3,818,601	9.15	1.27	**7.45**
Prudential Capital Partners V	150,000,000	95,317,107	100,172,352	13,469,379	58,112,879	15.42	1.19	**2.87**
Summit Partners								
Summit Subordinated Debt Fund III	45,000,000	44,088,494	3,775,715	60,443,093	2,250,000	8.94	1.46	**15.38**
Summit Subordinated Debt Fund IV	50,000,000	55,837,807	4,497,308	72,207,729	19,926,328	10.34	1.37	**11.26**
TCW Asset Management								
TCW Direct Lending VI	100,000,000	83,599,652	41,094,712	55,775,315	25,329,409	6.95	1.16	**4.78**
TCW Direct Lending VII	100,000,000	46,649,820	44,951,969	2,090,382	56,312,832	1.14	1.01	**1.46**
Private Credit Total	**2,382,352,584**	**1,662,770,194**	**620,606,240**	**1,571,485,255**	**893,279,534**	**9.78**	**1.57**	
III. REAL ASSETS								
BlackRock								
BlackRock Global Renewable Power Fund II	98,500,000	71,851,849	64,300,805	7,302,385	31,953,056	-0.23	1.00	**3.60**
BlackRock Global Renewable Power III	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.00**
EIG Global Energy Partners								
EIG Energy Fund XIV	100,000,000	113,177,137	10,055,062	94,745,253	2,761,129	-2.63	0.93	**12.20**
EIG Energy Fund XV	150,000,000	158,830,662	61,908,466	126,025,464	22,639,867	4.39	1.18	**9.07**
EIG Energy Fund XVI	200,000,000	175,065,404	141,125,078	74,997,472	61,284,878	7.97	1.23	**5.80**
EnCap Energy								
EnCap Energy Capital Fund VII	100,000,000	105,357,255	6,695,740	134,445,165	0	14.69	1.34	**12.00**
EnCap Energy Capital Fund VIII	100,000,000	99,410,912	29,735,050	54,781,243	4,394,899	-4.63	0.85	**8.75**
Encap Energy Capital Fund IX	100,000,000	110,823,005	63,499,315	83,380,279	6,773,227	11.64	1.33	**6.56**
EnCap Energy Capital Fund X	100,000,000	89,431,154	88,970,255	17,941,118	18,457,972	9.34	1.20	**4.32**
EnerVest Energy								
EnerVest Energy Institutional Fund XIV	100,000,000	94,477,443	84,813,383	39,331,232	13,616,255	10.42	1.31	**4.05**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Energy Capital Partners								
Energy Capital Partners II	100,000,000	85,551,360	10,522,129	111,999,239	29,749,110	10.04	1.43	**8.95**
Energy Capital Partners III	200,000,000	212,241,686	188,477,831	72,780,457	23,035,898	9.47	1.23	**5.53**
Energy Capital Partners IV	150,000,000	32,176,519	38,770,699	4,438,160	121,850,930	21.53	1.34	**1.50**
Energy & Minerals Group								
NGP Midstream & Resources	100,000,000	103,527,211	12,924,377	177,127,292	17,857	13.79	1.84	**12.25**
The Energy & Minerals Group Fund II	100,000,000	104,661,204	97,151,752	102,384,837	1,248,635	15.09	1.91	**7.77**
The Energy & Minerals Group Fund III	200,000,000	193,189,614	145,655,463	18,455,888	8,858,864	-3.79	0.85	**5.32**
The Energy & Minerals Group Fund IV	150,000,000	139,484,836	173,491,174	46,061,233	31,668,077	20.81	1.57	**3.67**
The Energy & Minerals Group Fund V	112,500,000	53,054,068	52,346,168	0	60,153,832	-1.51	0.99	**0.45**
The Energy & Minerals Group Fund V Accordion	17,500,000	5,103,313	5,020,444	0	12,479,556	-1.62	0.98	**0.45**
First Reserve								
First Reserve Fund X	100,000,000	100,000,000	345,851	182,429,002	0	31.05	1.83	**14.67**
First Reserve Fund XI	150,000,000	150,292,121	7,615,164	97,802,016	0	-7.22	0.70	**12.53**
First Reserve Fund XII	150,000,000	165,617,044	25,711,754	81,001,567	0	-9.83	0.64	**10.67**
First Reserve Fund XIII	200,000,000	189,013,029	151,013,118	64,019,391	34,769,711	8.96	1.14	**5.66**
Kohlberg, Kravis, Roberts & Co.								
KKR Global Infrastructure Investors III	149,850,000	30,430,430	28,337,121	269,379	119,688,949	-11.29	0.94	**1.25**
Merit Energy Partners								
Merit Energy Partners B	24,000,000	24,000,000	3,140,663	188,273,079	0	24.28	7.98	**22.44**
Merit Energy Partners C	50,000,000	50,000,000	4,970,844	514,177,741	0	30.96	10.38	**20.68**
Merit Energy Partners D	88,000,000	70,938,303	11,709,964	333,800,338	0	22.68	4.87	**18.11**
Merit Energy Partners E	100,000,000	39,983,197	2,538,764	81,775,382	0	11.35	2.11	**14.75**
Merit Energy Partners F	100,000,000	59,522,861	10,156,598	29,476,349	0	-6.67	0.67	**13.27**
Merit Energy Partners H	100,000,000	100,000,000	67,682,353	29,668,582	0	-0.55	0.97	**8.41**
Merit Energy Partners I	169,721,518	169,721,518	206,201,949	35,839,059	0	14.02	1.43	**4.70**
Merit Energy Partners K	150,000,000	2,695,869	2,695,869	0	147,304,131	0.00	1.00	**0.50**
NGP								
Natural Gas Partners IX	150,000,000	173,775,602	3,806,436	244,762,733	750,911	12.05	1.43	**11.69**
NGP Natural Resources X	150,000,000	144,048,971	48,896,083	105,475,349	5,951,029	2.08	1.07	**7.72**
Natural Gas Capital Resources XI	150,000,000	138,508,362	133,217,764	36,061,956	17,686,974	9.35	1.22	**4.56**
NGP Natural Resources XII	149,500,000	47,426,435	46,101,851	0	101,733,090	-2.18	0.97	**1.91**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Sheridan								
Sheridan Production Partners I	100,000,000	116,552,260	0	82,750,000	0	0.00	0.71	**12.25**
Sheridan Production Partners II	100,000,000	103,500,000	0	7,000,000	3,500,000	0.00	0.07	**8.75**
Sheridan Production Partners III	100,000,000	34,353,005	31,463,007	18,300,000	65,650,000	15.72	1.45	**4.56**
Real Assets Total	**4,709,571,518**	**3,857,793,640**	**2,061,068,343**	**3,299,078,639**	**1,047,978,837**	**13.86**	**1.39**	

IV. REAL ESTATE

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Angelo, Gordon & Co.								
AG Realty Fund IX	100,000,000	85,141,582	97,766,699	13,500,000	18,650,000	12.01	1.31	**4.56**
AG Asia Realty Fund III	50,000,000	47,587,261	35,801,909	25,500,000	6,196,250	15.27	1.29	**2.75**
AG Europe Realty Fund II	75,000,000	44,419,306	48,279,555	28,384	30,000,000	9.29	1.09	**2.03**
AG Realty Fund X	150,000,000	11,250,000	10,551,758	0	138,750,000	-6.21	0.94	**1.16**
AG Asia Realty Fund IV	100,000,000	21,500,000	20,479,653	0	78,500,000	-7.67	0.95	**1.06**
Blackstone Real Estate Partners								
Blackstone Real Estate Partners V	100,000,000	104,213,007	8,383,773	198,817,559	4,174,052	10.81	1.99	**13.18**
Blackstone Real Estate Partners VI	100,000,000	109,477,567	7,750,775	212,185,500	4,907,906	13.13	2.01	**12.25**
Blackstone Real Estate Partners VII	100,000,000	107,804,867	54,424,581	135,336,808	13,995,597	16.50	1.76	**7.59**
Blackstone Real Estate Partners VIII	150,000,000	153,987,897	143,957,411	49,613,369	34,451,207	13.71	1.26	**4.26**
Blackstone Real Estate Partners Asia II	74,500,000	19,254,681	19,049,268	58,531	56,485,060	-1.21	0.99	**1.77**
Blackstone Real Estate Partners IX	300,000,000	20,985,807	20,985,807	0	279,014,193	0.00	1.00	**0.77**
Blackstone Strategic Partners (CSFB)								
Strategic Partners III RE	25,000,000	25,988,048	669,361	14,666,337	9,006	-6.50	0.59	**14.00**
Strategic Partners IV RE	50,000,000	51,457,110	4,353,373	47,406,186	1,099,705	0.10	1.01	**11.04**
Carlyle Group								
Carlyle Realty Partners VIII	150,000,000	21,611,477	19,472,117	22,142	128,419,532	-12.76	0.90	**2.15**
Colony Capital								
Colony Investors III	100,000,000	99,660,860	2,797,200	173,802,105	0	14.50	1.77	**21.51**
Landmark Partners								
Landmark Real Estate Partners VIII	149,500,000	51,008,559	39,643,728	19,002,603	100,746,380	21.52	1.15	**2.54**
Lubert Adler								
Lubert-Adler Real Estate Fund VII-B	74,147,868	50,901,943	54,417,408	1,731,088	24,098,057	8.66	1.10	**2.73**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Rockpoint								
Rockpoint Real Estate Fund V	100,000,000	87,751,100	85,937,240	18,087,068	26,125,220	10.50	1.19	**4.47**
Rockpoint Real Estate Fund VI	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.53**
Rockwood								
Rockwood Capital RE Partners X	100,000,000	80,688,042	79,770,200	5,136,364	21,020,756	3.57	1.05	**3.96**
Silverpeak Real Estate Partners								
Silverpeak Legacy Pension Partners II	75,000,000	72,989,105	1,000,793	91,251,847	7,575,965	4.17	1.26	**13.92**
Silverpeak Legacy Pension Partners III	150,000,000	70,494,349	11,711,657	13,348,355	79,510,201	-11.16	0.36	**11.17**
T.A. Associates Realty								
Realty Associates Fund VIII	100,000,000	100,000,000	64,142	99,227,557	0	-0.08	0.99	**13.00**
Realty Associates Fund X	100,000,000	100,000,000	18,052,727	143,623,080	0	13.03	1.62	**7.33**
Realty Associates Fund XI	100,000,000	100,000,000	101,979,821	18,849,780	0	8.96	1.21	**3.99**
Realty Associates Fund XII	100,000,000	0	-923,817	0	100,000,000	0.00	0.00	**1.25**
Real Estate Total	**2,773,147,868**	**1,638,172,566**	**886,377,140**	**1,281,194,662**	**1,253,729,087**	**7.92**	**1.32**	
V. DISTRESSED/ OPPORTUNISTIC								
Avenue Capital Partners								
Avenue Energy Opportunities Fund	100,000,000	100,977,328	106,588,772	15,972,941	0	5.24	1.21	**5.00**
Avenue Energy Opportunities Fund II	100,000,000	100,000,000	95,171,700	417,420	0	-3.32	0.96	**2.15**
BlackRock**								
BlackRock Tempus Fund	1,774,870	1,774,870	309,207	1,683,064	0	6.97	1.12	**4.05**
Carlyle Group								
Carlyle Strategic Partners IV	100,000,000	44,816,741	28,810,368	20,126,174	75,267,542	9.59	1.09	**3.25**
Carval Investors								
CVI Global Value Fund	200,000,000	190,000,000	5,014,630	315,467,952	10,000,000	9.53	1.69	**12.47**
CVI Credit Value Fund I	100,000,000	95,000,000	6,155,633	207,569,569	5,000,000	18.77	2.25	**8.75**
CVI Credit Value Fund A II	150,000,000	142,500,000	18,602,989	183,916,732	7,500,000	8.36	1.42	**6.67**
CVI Credit Value Fund A III	150,000,000	142,500,000	92,689,352	87,992,438	7,500,000	9.12	1.27	**4.07**
CVI Credit Value Fund IV	150,000,000	90,203,333	94,842,630	60	60,000,000	6.16	1.05	**1.74**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Merced Capital								
Merced Partners III	100,000,000	100,000,000	12,805,382	122,497,107	0	6.16	1.35	**9.15**
Merced Partners IV	125,000,000	124,968,390	76,576,503	79,977,033	0	5.70	1.25	**5.97**
Merced Partners V	53,737,500	53,915,358	52,927,676	0	0	-0.86	0.98	**2.00**
MHR Institutional Partners								
MHR Institutional Partners IV	75,000,000	38,434,392	35,027,900	3,751,515	40,258,543	0.39	1.01	**5.03**
Oaktree Capital Management								
Oaktree Principal Fund VI	100,000,000	87,331,294	84,286,766	14,037,147	25,193,967	7.17	1.13	**4.50**
Oaktree Opportunities Fund X	50,000,000	46,500,021	46,991,592	11,119,660	8,500,000	12.00	1.25	**4.38**
Oaktree Opportunities Fund Xb	100,000,000	12,500,000	11,797,738	0	87,500,000	-5.68	0.94	**4.38**
Oaktree Special Situations Fund II	100,000,000	2,188,074	2,200,000	0	97,800,000	5.99	1.01	**1.18**
Pimco Bravo**								
Pimco Bravo Fund OnShore Feeder I	3,958,027	3,958,027	67,320	3,978,735	2,348,173	2.16	1.02	**4.50**
Pimco Bravo Fund OnShore Feeder II	5,243,670	4,685,039	2,521,163	3,550,978	4,118,804	6.33	1.30	**4.50**
TSSP								
TSSP Adjacent Opportunities Partner	50,000,000	24,497,486	24,912,524	782,950	26,285,464	7.55	1.05	**1.24**
TSSP Adjacent Opportunities Contingent	100,000,000	70,318	70,318	0	99,929,682	0.00	1.00	**1.32**
TSSP Opportunities Partners IV	50,000,000	8,088,859	8,312,337	9,829	41,911,141	5.03	1.03	**1.14**
Varde Fund								
Varde Fund IX	100,000,000	100,000,000	619,952	215,289,913	0	15.00	2.16	**11.02**
Varde Fund X	150,000,000	150,000,000	41,683,462	245,539,746	0	11.63	1.91	**9.19**
Varde Fund XI	200,000,000	200,000,000	196,324,084	102,489,281	0	7.93	1.49	**5.97**
Varde Fund XIII	150,000,000	7,500,000	9,292,418	0	142,500,000	23.90	1.24	**0.98**
Wayzata								
Wayzata Opportunities Fund II	150,000,000	174,750,000	2,240,735	327,229,040	30,000,000	16.48	1.89	**11.69**
Wayzata Opportunities Fund III	150,000,000	68,415,000	26,426,045	37,605,787	15,000,000	-2.04	0.94	**7.04**
Distressed/Opportunistic Total	**2,864,714,067**	**2,115,574,530**	**1,083,269,197**	**2,001,005,070**	**786,613,316**	**10.59**	**1.46**	
Private Markets Total	**27,931,527,185**	**18,925,607,267**	**10,677,122,201**	**17,194,570,622**	**10,357,141,847**	**11.81**	**1.47**	

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years

Private Markets Portfolio Status	Manager Count	Investments Count
PRIVATE EQUITY	51	137
PRIVATE CREDIT	13	25
REAL ASSETS	11	42
REAL ESTATE	11	26
DISTRESSED/ OPPORTUNISTIC	11	28
Total	97	258

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.

This page intentionally left blank.

Participant Directed Investment Program

September 30, 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 an investment platform that provides participants with the option to invest in many of the same pools as the Combined Fund in addition to a Stable Value Fund and a Money Market Fund. The Volunteer Firefighter Account is an option in the SIF for local firefighter entities that join the Statewide Voluntary Firefighter Plan administered by PERA. The investment vehicles are structured much like a family of mutual funds where participating entities buy or sell units in each fund. Participants may allocate their investments among one or more funds that are appropriate for their needs and are within statutory requirements and rules established by the participating organizations.
- The Mutual Fund Line-up is an investment platform that offers participants three sets of investment options. The first is a set of actively and passively managed mutual funds, a Stable Value Fund and a Money Market Fund. 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. 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.
- The SBI is responsible for the investment options provided in the two State Sponsored Savings Plans, which are established under provisions of the Internal Revenue Code 529, the Minnesota College Savings Plan and Minnesota Achieving a Better Life Experience Plan (ABLE). The Minnesota College Savings Plan is an educational savings plan designed to help families save for qualified nationwide 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 have contracted jointly with TIAA-CREF Tuition Financing, Inc. to provide administrative, marketing, communication, recordkeeping and investment management services. The ABLE Plan 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 platform that offers a range of investment options to state and local public employees. This investment platform provides some or all of the investment options to the Public Employees Retirement Association (PERA) Defined Contribution Plan, local pension 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	$92,847,635	3.3%	7.6%	9.8%	8.2%	9.8%	01/1980
U.S. ACTIVELY MANAGED FUND	60,362,194	-0.7	0.9	13.6	10.4	13.2	07/1986
U.S. STOCK INDEX FUND	358,248,991	1.2	3.0	12.8	10.5	13.1	07/1986
BROAD INTERNATIONAL STOCK FUND	109,303,224	-1.5	-0.9	6.4	3.4	5.0	09/1994
BOND FUND	108,621,148	2.3	10.4	3.5	3.8	4.6	07/1986
MONEY MARKET FUND	489,764,230	0.6	2.5	1.7	1.2	0.7	07/1986
STABLE VALUE FUND	1,601,332,885	0.7	2.7	2.3	2.2	2.6	11/1994
VOLUNTEER FIREFIGHTER ACCOUNT	107,080,245	1.3	5.9	7.3	6.1		01/2010
TOTAL SUPPLEMENTAL INVESTMENT FUND	2,927,560,550						

Note:
The Market Values for the Money Market Fund, the Stable Value Fund, and the Total Supplemental Investment Fund also include assets held through other plans.

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	**$92,847,635**	**3.3%**	**7.6%**	**9.8%**	**8.2%**	**9.8%**
SIF BALANCED FUND BENCHMARK		1.6	5.9	8.9	7.7	9.3
Excess		1.8	1.7	0.9	0.5	0.5

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	**60,362,194**	**-0.7**	**0.9**	**13.6**	**10.4**	**13.2**
Russell 3000		1.2	2.9	12.8	10.4	13.1
Excess		-1.9	-2.0	0.7	-0.0	0.1

Supplemental Investment Fund Performance

U.S. Stock Index Fund

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
U.S. STOCK INDEX FUND	**$358,248,991**	**1.2%**	**3.0%**	**12.8%**	**10.5%**	**13.1%**
Russell 3000		1.2	2.9	12.8	10.4	13.1
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	**109,303,224**	**-1.5**	**-0.9**	**6.4**	**3.4**	**5.0**
International Equity Benchmark		-1.8	-1.2	6.4	2.9	4.5
Excess		0.3	0.2	0.1	0.5	0.5

Supplemental Investment Fund Performance

Bond Fund

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
BOND FUND	**$108,621,148**	**2.3%**	**10.4%**	**3.5%**	**3.8%**	**4.6%**
BBG BARC US Agg		2.3	10.3	2.9	3.4	3.7
Excess		0.1	0.1	0.5	0.5	0.9

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	**489,764,230**	**0.6**	**2.5**	**1.7**	**1.2**	**0.7**
ICE BofAML US 3-Month Treasury Bill		0.6	2.4	1.5	1.0	0.5
Excess		0.0	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	**$1,601,332,885**	**0.7%**	**2.7%**	**2.3%**	**2.2%**	**2.6%**
Fixed Interest Blended Benchmark		0.5	2.7	2.4	2.0	1.6
Excess		0.2	-0.0	-0.1	0.2	1.0

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	**107,080,245**	**1.3**	**5.9**	**7.3**	**6.1**	
SIF Volunteer Firefighter Account BM		1.2	6.0	7.0	5.8	
Excess		0.1	-0.1	0.3	0.3	

Mutual Funds

The mutual fund investment line-up provides investment options to the Minnesota Deferred Compensation Plan (MNDCP), Unclassified Retirement Plan, Health Care Savings Plan, and the Hennepin County Retirement Plan. The MNDCP is a tax-sheltered retirement savings plan that is supplemental to public employees primary retirement plan. (In most cases, the primary plan is a defined benefit plan administered by TRA, PERA, or MSRS.) Participants can choose from active and passively managed stock and bond funds, a Stable Value Fund, a Money Market Fund, a set of 10 target date retirement fund options, and a brokerage window where participants can choose from hundreds of mutual funds.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year	Option Since
VANGUARD TOTAL STOCK MARKET INSTITUTIONAL INDEX PLUS	$500,050,877	1.1%					07/2019
VANGUARD INSTITUTIONAL INDEX PLUS	1,323,231,629	1.7	4.2%	13.4%	10.8%	13.2%	07/1999
VANGUARD DIVIDEND GROWTH	744,316,669	3.5	14.0	14.8			10/2016
VANGUARD MID CAP INDEX	566,932,988	0.6	3.7	10.7	9.2	13.1	01/2004
T. ROWE PRICE SMALL-CAP STOCK	778,468,293	0.2	4.5	14.5	12.0	14.9	04/2000
FIDELITY DIVERSIFIED INTERNATIONAL	293,377,319	0.3	1.3	6.6	4.7	6.0	07/1999
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	284,373,434	-1.6	-1.5	6.1	3.2		07/2011
VANGUARD BALANCED INDEX	1,216,589,233	1.7	6.3	9.0	7.8	9.5	12/2003
DODGE & COX INCOME	268,868,756	2.1	9.1	3.8	3.7	4.5	07/1999
VANGUARD TOTAL BOND MARKET INDEX	333,260,871	2.4	10.4	2.9	3.3	3.7	12/2003
2020 FUND	130,616,611	1.0	5.4	5.3	4.4		07/2011
2025 FUND	156,592,341	1.0	5.2	6.4	5.3		07/2011
2030 FUND	114,347,477	1.0	4.9	7.5	6.1		07/2011
2035 FUND	89,380,366	1.0	4.6	8.1	6.4		07/2011
2040 FUND	68,916,285	0.8	3.9	8.5	6.7		07/2011
2045 FUND	57,834,564	0.7	3.3	8.8	6.8		07/2011
2050 FUND	43,680,187	0.5	2.6	9.1	6.9		07/2011
2055 FUND	25,555,313	0.4	2.5	9.0	6.9		07/2011
2060 FUND	20,871,298	0.4	2.5	9.0	6.9		07/2011
INCOME FUND	94,670,699	1.0	5.5	4.8	3.9		07/2011
TD Ameritrade SDB	74,730,001						
TD Ameritrade SDB Roth	1,035,334						
Total Mutual Funds	7,187,700,545						

Mutual Funds

LARGE CAP EQUITY

Vanguard Total Stock Market Institutional Index Plus (passive)

A passive domestic stock portfolio of large and small companies that tracks the CRSP US Total Market Index.

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 TOTAL STOCK MARKET INSTITUTIONAL INDEX PLUS	$500,050,877	1.1%				07/2019
CRSP US Total Market Index		1.1				07/2019
Excess		-0.0				
VANGUARD INSTITUTIONAL INDEX PLUS	**1,323,231,629**	**1.7**	**4.2%**	**13.4%**	**10.8%**	**07/1999**
S&P 500		1.7	4.3	13.4	10.8	07/1999
Excess		-0.0	-0.0	-0.0	-0.0	
VANGUARD DIVIDEND GROWTH	**744,316,669**	**3.5**	**14.0**	**14.8**		**10/2016**
NASDAQ US Dividend Achievers Select		4.2	10.1	14.8		10/2016
Excess		-0.7	3.9	-0.1		
Mid Cap US Equity						
VANGUARD MID CAP INDEX	**566,932,988**	**0.6**	**3.7**	**10.7**	**9.2**	**01/2004**
CRSP US Mid Cap Index		0.6	3.7	10.7	9.2	01/2004
Excess		-0.0	-0.0	-0.0	-0.0	
Small Cap US Equity						
T. ROWE PRICE SMALL-CAP STOCK	**778,468,293**	**0.2**	**4.5**	**14.5**	**12.0**	**04/2000**
Russell 2000		-2.4	-8.9	8.2	8.2	04/2000
Excess		2.6	13.4	6.3	3.8	
International Equity						
FIDELITY DIVERSIFIED INTERNATIONAL	**293,377,319**	**0.3**	**1.3**	**6.6**	**4.7**	**07/1999**
MSCI EAFE FREE (NET)		-1.1	-1.3	6.5	3.3	07/1999
Excess		1.4	2.7	0.1	1.4	
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	**284,373,434**	**-1.6**	**-1.5**	**6.1**	**3.2**	**07/2011**
FTSE Global All Cap ex US Index Net		-1.7	-1.8	6.0	3.0	07/2011
Excess		0.1	0.3	0.1	0.2	

Mutual Funds

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.

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

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	**$1,216,589,233**	**1.7%**	**6.3%**	**9.0%**	**7.8%**	**12/2003**
Vanguard Balanced Fund Benchmark		1.6	6.3	9.0	7.8	12/2003
Excess		0.1	-0.1	-0.0	-0.0	
Fixed Income						
DODGE & COX INCOME	**268,868,756**	**2.1**	**9.1**	**3.8**	**3.7**	**07/1999**
BBG BARC Agg Bd		2.3	10.3	2.9	3.4	07/1999
Excess		-0.2	-1.2	0.9	0.3	
VANGUARD TOTAL BOND MARKET INDEX	**333,260,871**	**2.4**	**10.4**	**2.9**	**3.3**	**12/2003**
BBG BARC Agg Bd		2.3	10.3	2.9	3.4	12/2003
Excess		0.1	0.1	-0.0	-0.0	
MONEY MARKET FUND	**489,764,230**	**0.6**	**2.5**	**1.7**	**1.2**	**07/1986**
90 Day Treasury Bill		0.6	2.4	1.5	1.0	07/1986
Excess		0.0	0.2	0.2	0.2	
Stable Value						
STABLE VALUE FUND	**1,601,332,885**	**0.7**	**2.7**	**2.3**	**2.2**	**11/1994**
Fixed Interest Blended Benchmark		0.5	2.7	2.4	2.0	11/1994
Excess		0.2	-0.0	-0.1	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) Money Market and Stable Value are Supplemental Investment Fund options which are also offered to eligible plans that invest through other plans.

Mutual Funds

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
SSgA						
2020 FUND	**$130,616,611**	**1.0%**	**5.4%**	**5.3%**	**4.4%**	**07/2011**
2020 FUND BENCHMARK		1.0	5.4	5.3	4.4	07/2011
Excess		0.0	0.0	-0.0	-0.0	
2025 FUND	**156,592,341**	**1.0**	**5.2**	**6.4**	**5.3**	**07/2011**
2025 FUND BENCHMARK		1.0	5.2	6.4	5.3	07/2011
Excess		-0.0	0.0	0.0	-0.0	
2030 FUND	**114,347,477**	**1.0**	**4.9**	**7.5**	**6.1**	**07/2011**
2030 FUND BENCHMARK		1.0	4.8	7.6	6.1	07/2011
Excess		0.0	0.0	-0.0	-0.0	
2035 FUND	**89,380,366**	**1.0**	**4.6**	**8.1**	**6.4**	**07/2011**
2035 FUND BENCHMARK		1.0	4.5	8.1	6.4	07/2011
Excess		-0.0	0.0	-0.0	-0.0	
2040 FUND	**68,916,285**	**0.8**	**3.9**	**8.5**	**6.7**	**07/2011**
2040 FUND BENCHMARK		0.8	3.9	8.5	6.7	07/2011
Excess		-0.0	0.0	-0.0	-0.0	
2045 FUND	**$57,834,564**	**0.7%**	**3.3%**	**8.8%**	**6.8%**	**07/2011**
2045 FUND BENCHMARK		0.7	3.3	8.8	6.8	07/2011
Excess		-0.0	0.0	0.0	-0.0	
2050 FUND	**43,680,187**	**0.5**	**2.6**	**9.1**	**6.9**	**07/2011**
2050 FUND BENCHMARK		0.5	2.6	9.1	6.9	07/2011
Excess		0.0	0.0	0.0	-0.0	
2055 FUND	**25,555,313**	**0.4**	**2.5**	**9.0**	**6.9**	**07/2011**
2055 FUND BENCHMARK		0.4	2.5	9.0	6.9	07/2011
Excess		0.0	0.0	0.0	-0.0	
2060 FUND	**20,871,298**	**0.4**	**2.5**	**9.0**	**6.9**	**07/2011**
2060 FUND BENCHMARK		0.4	2.5	9.0	6.9	07/2011
Excess		0.0	0.0	0.0	-0.0	
INCOME FUND	**94,670,699**	**1.0**	**5.5**	**4.8**	**3.9**	**07/2011**
INCOME FUND BENCHMARK		1.0	5.5	4.8	4.0	07/2011
Excess		-0.0	-0.0	-0.0	-0.0	

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

MN College Savings Plan Options

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

The SBI and OHE contract jointly with TIAA to provide administrative, marketing, communication, recordkeeping and investment management services. Please see the next page for the performance as reported by TIAA.

AGE-BASED MANAGED ALLOCATIONS

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

RISK BASED ALLOCATIONS

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

ASSET CLASS BASED ALLOCATIONS

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

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

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

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

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

100% FIXED INCOME - A fund that passively invests in fixed income holdings that tracks the Bloomberg Barclays U.S. Aggregate and two active funds that invest in inflation-linked bonds and high yield securities. The fund is expected to track a weighted benchmark of 70% BB Barclays Aggregate, 20% inflation-linked bond, and 10% high yield.

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

MINNESOTA COLLEGE SAVINGS PLAN
Performance Statistics for the Period Ending: September 30, 2019

Total = $1,493 Million

Fund Name	Ending Market	3 Months	1 Year	Annualized 3 Years	5 Years	10 Years	Since Inception	Inception Date
Managed Ages 0-4	$38,692,711	1.21%	4.55%	9.14%			7.16%	8/12/2014
BB: Managed Ages 0-4		1.16%	4.73%	9.18%			7.24%	
Managed Ages 5-8	$70,900,774	1.31%	5.06%	8.37%			6.64%	8/12/2014
BB: Managed Ages 5-8		1.25%	5.38%	8.44%			6.76%	
Managed Ages 9-10	$62,055,123	1.49%	5.68%	7.67%			6.14%	8/12/2014
BB: Managed Ages 9-10		1.35%	6.00%	7.70%			6.27%	
Managed Ages 11-12	$93,330,791	1.46%	5.70%	6.77%			5.51%	8/12/2014
BB: Managed Ages 11-12		1.37%	6.25%	6.86%			5.66%	
Managed Ages 13-14	$134,750,765	1.43%	5.96%	5.96%			4.93%	8/12/2014
BB: Managed Ages 13-14		1.40%	6.47%	6.02%			5.04%	
Managed Age 15	$77,268,864	1.31%	5.56%	5.00%			4.18%	8/12/2014
BB: Managed Age 15		1.29%	5.99%	5.02%			4.19%	
Managed Age 16	$91,947,981	1.17%	4.87%	4.42%			3.73%	8/12/2014
BB: Managed Age 16		1.20%	5.56%	4.48%			3.70%	
Managed Age 17	$92,277,410	1.02%	4.51%	3.92%			3.33%	8/12/2014
BB: Managed Age 17		1.11%	5.14%	3.93%			3.22%	
Managed Ages 18 & Over	$225,845,478	0.96%	4.13%	3.44%			2.93%	8/12/2014
BB: Managed Ages 18 & Over		1.03%	4.70%	3.39%			2.73%	
U.S. and International Equity Option	$288,845,805	1.05%	3.49%	10.58%	8.37%	10.69%	7.01%	10/ 1/2001
BB: U.S. and International Equity Option		0.95%	3.36%	10.63%	8.41%	10.88%	7.83%	

MINNESOTA COLLEGE SAVINGS PLAN

Performance Statistics for the Period Ending: September 30, 2019

Fund Name	Ending Market	3 Months	1 Year	Annualized 3 Years	Annualized 5 Years	Annualized 10 Years	Annualized Since Inception	Inception Date
Moderate Allocation Option	$73,360,496	1.45%	5.65%	7.63%	6.35%	7.83%	5.37%	8/ 2/2007
BB: Moderate Allocation Option		1.35%	6.00%	7.70%	6.51%	8.20%	5.90%	
100% Fixed-Income Option	$18,185,707	1.83%	8.78%	2.73%	3.02%	3.32%	3.74%	8/16/2007
BB: 100% Fixed-Income Option		1.88%	9.15%	3.04%	3.32%	3.77%	4.36%	
International Equity Index Option	$4,880,339	-1.61%	-1.23%	6.24%	3.09%		4.03%	6/18/2013
BB: International Equity Index Option		-1.71%	-1.44%	6.42%	3.15%		4.25%	
Money Market Option	$13,589,884	0.47%	2.01%	1.25%	0.77%	0.33%	0.54%	11/ 1/2007
BB: Money Market Option		0.45%	1.91%	1.12%	0.69%	0.36%	0.54%	
Principal Plus Interest Option	$121,457,581	0.52%	2.03%	1.73%	1.56%	1.76%	2.49%	10/10/2001
Citigroup 3-Month U.S. Treasury Bill		0.56%	2.36%	1.52%	0.96%	0.52%	1.34%	
Aggressive Allocation Option	$31,609,673	1.21%	4.48%	9.16%			7.11%	8/12/2014
BB: Aggressive Allocation Option		1.16%	4.73%	9.18%			7.24%	
Conservative Allocation Option	$11,805,445	1.33%	5.52%	4.95%			4.01%	8/18/2014
BB: Conservative Allocation Option		1.29%	5.99%	5.02%			4.06%	
Equity and Interest Accumulation Option	$4,816,835	0.83%	2.31%	7.16%			5.71%	8/18/2014
BB: Equity and Interest Accumulation Option		0.87%	3.09%	7.25%			5.62%	
U.S. Large Cap Equity Option	$34,904,592	1.68%	4.12%	13.17%			10.80%	8/12/2014
BB: U.S. Large Cap Equity Option		1.70%	4.25%	13.39%			11.03%	
Matching Grant	$2,328,266	0.52%	2.03%	1.73%	1.56%	1.76%	2.51%	3/22/2002
Citigroup 3-Month U.S. Treasury Bill		0.56%	2.36%	1.52%	0.96%	0.52%	1.32%	

MINNESOTABLEplan
A member of The National ABLE Alliance

Performance as of
09/30/19

Total Market Value: $ **7,327,649**

Fund Name		**Market Value**	**% of Plan**	**1 Month**	**3 Months**	**YTD**	**1 Year**	**3 Year**	**5 Year**	**10 Year**	**Inception**	**Inception Date**
Aggressive Option	$	637,291	8.70%	1.61	0.48	16.27	2.10				8.78	12/15/16
ABLE Aggressive Custom Benchmark				1.61	0.44	16.55	2.33				9.33	
Variance				**0.00**	**0.04**	**(0.28)**	**(0.23)**				**(0.55)**	
Moderately Aggressive Option	$	698,916	9.54%	1.31	0.65	14.55	3.00				7.88	12/15/16
ABLE Moderately Aggressive Custom Benchmark				1.27	0.59	14.80	3.32				8.42	
Variance				**0.04**	**0.06**	**(0.25)**	**(0.32)**				**(0.54)**	
Growth Option	$	1,035,023	14.12%	1.01	0.75	12.82	3.79				6.94	12/15/16
ABLE Growth Custom Benchmark				0.94	0.74	13.05	4.22				7.48	
Variance				**0.07**	**0.01**	**(0.23)**	**(0.43)**				**(0.54)**	
Moderate Option	$	898,895	12.27%	0.60	0.94	10.93	4.53				6.01	12/15/16
ABLE Moderate Custom Benchmark				0.61	0.89	11.30	5.05				6.50	
Variance				**(0.01)**	**0.05**	**(0.37)**	**(0.52)**				**(0.49)**	
Moderately Conservative Option	$	771,180	10.52%	0.44	0.89	8.10	4.13				4.61	12/15/16
ABLE Moderately Conservative Custom Benchmark				0.42	0.84	8.45	4.62				5.04	
Variance				**0.02**	**0.05**	**(0.35)**	**(0.49)**				**(0.43)**	
Conservative Option	$	1,191,959	16.27%	0.19	0.75	4.26	3.36				2.69	12/15/16
ABLE Conservative Custom Benchmark				0.17	0.76	4.62	3.83				3.02	
Variance				**0.02**	**(0.01)**	**(0.36)**	**(0.47)**				**(0.33)**	
Checking Option	$	2,094,384	28.58%									03/30/17

MINNESOTA ACHIEVE A BETTER LIFE EXPERIENCE

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

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

RISK BASED ALLOCATIONS

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

Non-Retirement

September 30, 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

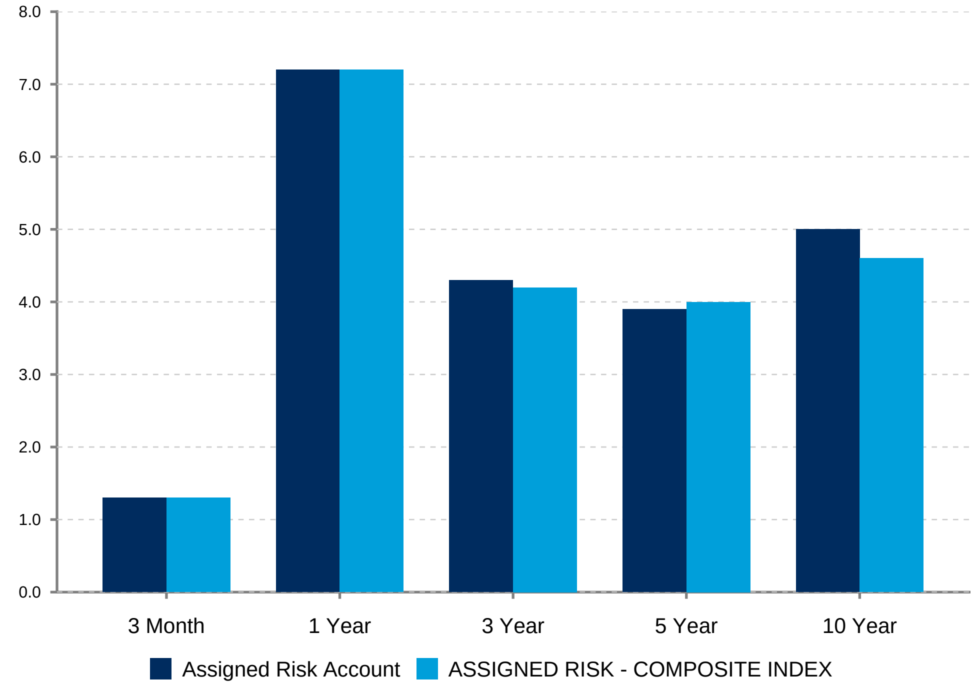
Assigned Risk Plan

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.

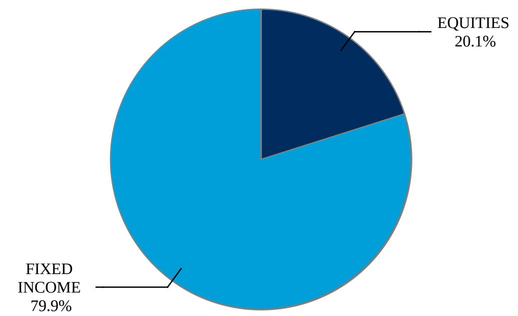
The Assigned Risk Plan is invested in a portfolio of common stocks and bonds

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	$288,063,961	1.3%	7.2%	4.3%	3.9%	5.0%
EQUITIES	57,962,401	1.7	4.3	13.3	9.8	12.0
FIXED INCOME	230,101,560	1.2	7.3	1.9	2.2	3.0
ASSIGNED RISK - COMPOSITE INDEX		1.3	7.2	4.2	4.0	4.6
Excess		0.0	0.1	0.1	-0.1	0.4
S&P 500		1.7	4.3	13.4	10.8	13.2
BBG BARC US Gov: Int		1.2	7.5	1.8	2.2	2.3



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

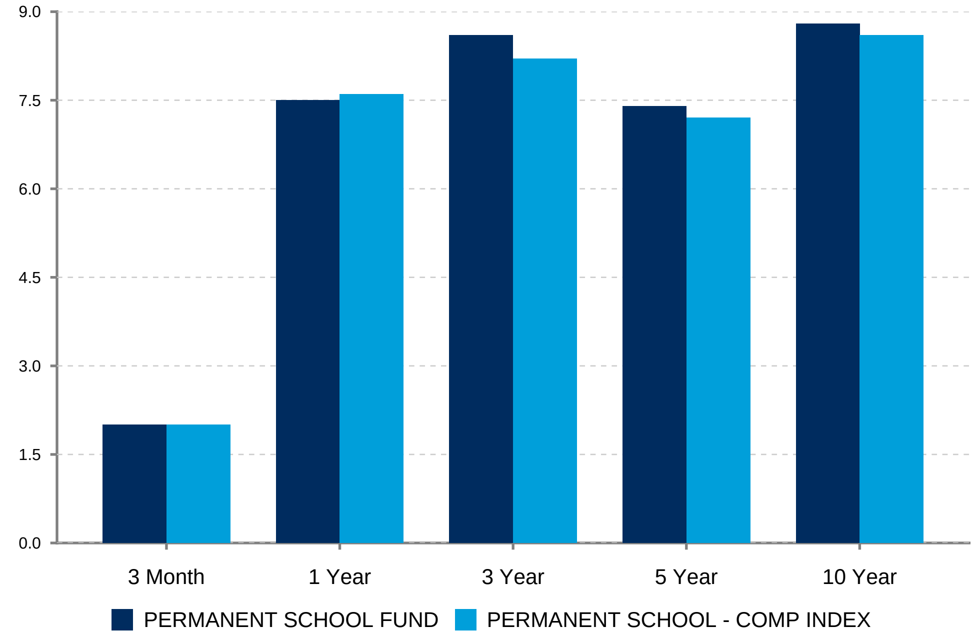
Non-Retirement

Permanent School Fund

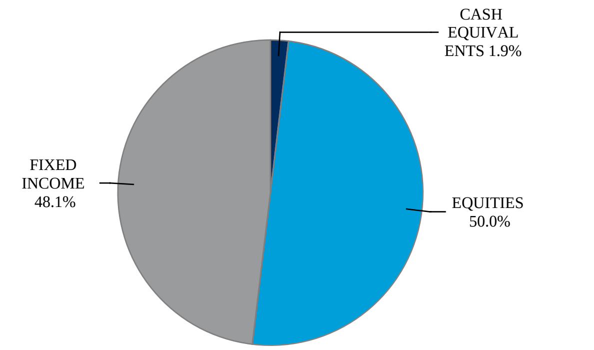
The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

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

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



	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
PERMANENT SCHOOL FUND	$1,544,309,975	2.0%	7.5%	8.6%	7.4%	8.8%
CASH EQUIVALENTS	29,075,788	0.6	2.5	1.6	1.1	0.7
EQUITIES	771,756,635	1.7	4.3	13.4	10.8	13.3
FIXED INCOME	743,477,552	2.4	10.8	3.5	3.8	4.2
PERMANENT SCHOOL - COMP INDEX		2.0	7.6	8.2	7.2	8.6
Excess		0.1	-0.0	0.3	0.2	0.2
S&P 500		1.7	4.3	13.4	10.8	13.2
BBG BARC US Agg		2.3	10.3	2.9	3.4	3.7



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.

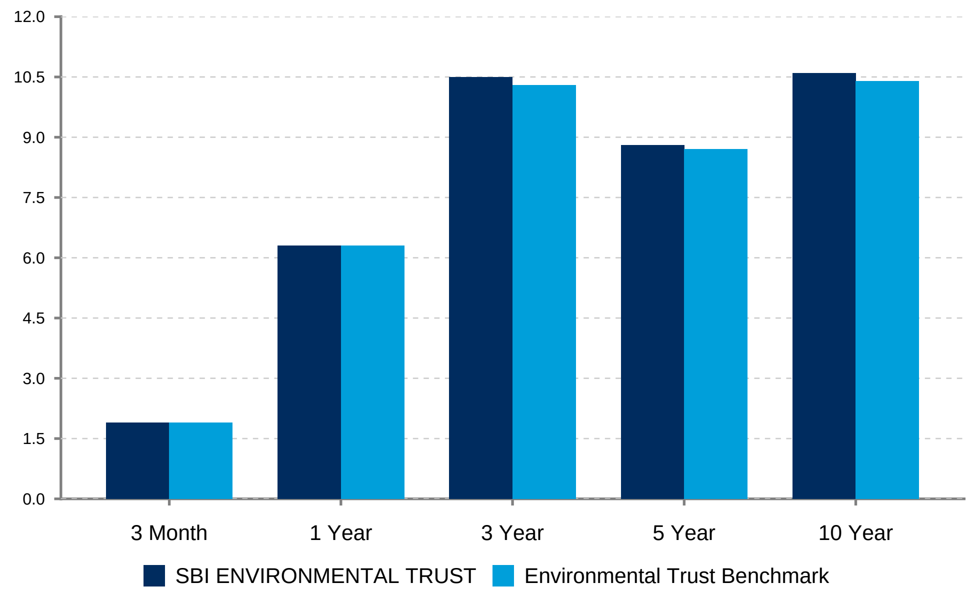
Non-Retirement

Environmental Trust Fund

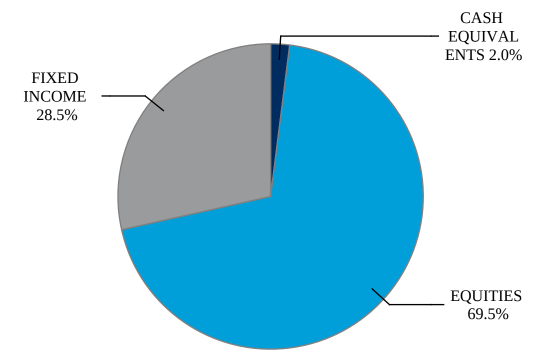
The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

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	$1,231,535,378	1.9%	6.3%	10.5%	8.8%	10.6%
CASH EQUIVALENTS	24,530,585	0.6	2.5	1.6	1.1	0.7
EQUITIES	856,371,501	1.7	4.3	13.4	10.8	13.3
FIXED INCOME	350,633,292	2.4	10.8	3.5	3.8	4.2
Environmental Trust Benchmark		1.9	6.3	10.3	8.7	10.4
Excess		0.0	0.0	0.2	0.1	0.1
S&P 500		1.7	4.3	13.4	10.8	13.2
BBG BARC US Agg		2.3	10.3	2.9	3.4	3.7



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.

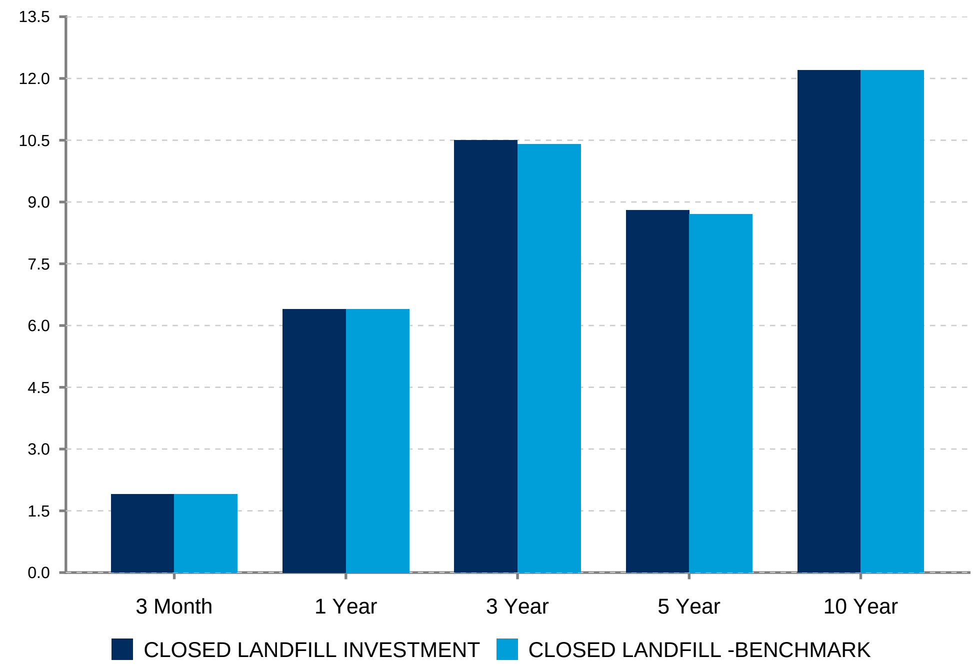
STATE STREET

Non-Retirement

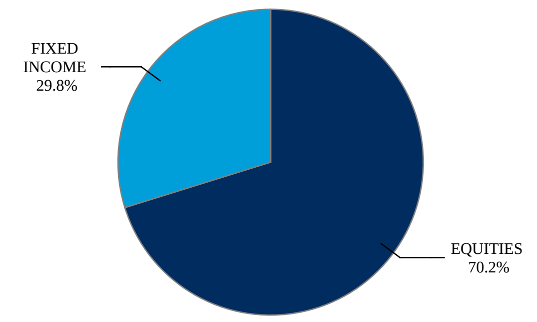
Closed Landfill Investment Fund

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	$98,666,557	1.9%	6.4%	10.5%	8.8%	12.2%
EQUITIES	69,235,349	1.7	4.3	13.4	10.8	13.3
FIXED INCOME	29,431,208	2.4	10.8	3.5	3.8	
CLOSED LANDFILL -BENCHMARK		1.9	6.4	10.4	8.7	12.2
Excess		0.0	-0.1	0.2	0.1	0.1
S&P 500		1.7	4.3	13.4	10.8	13.2
BBG BARC US Agg		2.3	10.3	2.9	3.4	3.7



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.

	Ending Market Value	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
NON RETIREMENT EQUITY INDEX - MELLON	**2,404,943,773**	**1.7**	**1.7**	**4.3**	**13.4**	**10.9**	**13.2**	**9.7**	**07/1993**
S&P 500 INDEX (DAILY)		1.7	1.7	4.3	13.4	10.8	13.2	9.6	07/1993
Excess		0.0	0.0	0.0	-0.0	0.0	0.0	0.1	
NON RETIREMENT FIXED INCOME - PRUDENTIAL	**1,299,927,930**	**2.4**	**2.4**	**10.8**	**3.5**	**3.8**	**4.2**	**6.0**	**07/1994**
BBG BARC Agg (Dly)		2.3	2.3	10.3	2.9	3.4	3.7	5.5	07/1994
Excess		0.2	0.2	0.5	0.5	0.4	0.4	0.5	
RBC	**230,101,557**	**1.2**	**1.2**	**7.3**	**1.9**	**2.2**	**3.0**	**4.9**	**07/1991**
RBC Custom Benchmark		1.2	1.2	7.5	1.8	2.2	2.4	5.0	07/1991
Excess		0.0	0.0	-0.2	0.1	0.1	0.7	-0.1	
MET COUNCIL OPEB BOND POOL	66,481,373	0.8	0.8	5.5					02/2009
NON RETIREMENT CASH	**131,061,207**	**0.6**	**0.6**	**2.5**	**1.6**	**1.1**	**0.7**	**2.7**	
iMoneyNet Money Fund Average-All Taxable		0.5	0.5	2.0	1.2	0.7	0.4		
Excess		0.1	0.1	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

September 30, 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	12,911,324,183	0.5	2.7	1.8	1.3	0.9
iMoneyNet Money Fund Average-All Taxable		0.5	2.0	1.2	0.7	0.4

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	97,417,516	1.1	6.4	2.7	2.7	
Housing Finance	7,651,014	0.5	2.4	1.6	1.7	
Public Facilities Authority	60,923,240	0.3	3.2	1.9	2.2	

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.