MINNESOTA STATE BOARD OF INVESTMENT

MINNESOTA STATE BOARD
OF INVESTMENT
MEETING
March 1, 2019

Governor Tim Walz

State Auditor Julie Blaha

Secretary of State Steve Simon

Attorney General Keith Ellison

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STATE BOARD OF INVESTMENT

AGENDA AND MINUTES

March 1, 2019

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AGENDA
STATE BOARD OF INVESTMENT MEETING
Friday, March 1, 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 December 11, 2018**	
2.	**Report from the Executive Director (Mansco Perry)**	
	A. Quarterly Performance Summary (October 1, 2018 – December 31, 2018)	**A**
	B. Administrative Report	**B**
	Information Updates	
	1. Reports on Budget and Travel	
	2. FY18 Audit Report	
	3. FY18 Annual Report	
	4. Legislative Update	
	5. Sudan Update	
	6. Iran Update	
	7. Litigation Update	
	Action Items	
	1. Proposal for Minnesota College Savings Plan (529 Plan) Contract	**C**
	2. Report from the Proxy Committee	**D**
	3. Report from the Investment Advisory Council Membership Committee	**E**

INVESTMENT ADVISORY COUNCIL REPORT

3.	**Private Markets Program (Gary Martin)**	**F**
4.	**Public Markets, Non-Retirement, and Participant Directed Investment Programs**	**G**

REPORTS

5.	**AON Market Environment Report**	**H**
6.	**PCA Investment Market Risk Metrics**	**I**
7.	**Comprehensive Performance Report**	**J**
8.	**Other Items**	

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Minutes
State Board of Investment
December 11, 2018

The State Board of Investment (SBI) met at 10:05 A.M. Tuesday, December 11, 2018 in G23 Senate Committee Room of the State Capitol, St. Paul, Minnesota. State Auditor Rebecca Otto, Secretary of State Steve Simon, and Attorney General Lori Swanson were present. Governor Mark Dayton was absent. Secretary of State Steve Simon moved that State Auditor Rebecca Otto chair the meeting. The motion passed. The minutes of the September 14, 2018 meeting were approved.

Executive Director's Report
Mr. Perry referred members to Tab A of the meeting materials and stated that, as of September 30, 2018, the SBI was responsible for managing $97 billion of assets. Mr. Perry reported that the Combined Funds had outperformed its Composite Index over the ten-year period ending September 30, 2018 (Combined Funds 9.1% vs. Combined Funds-Composite Index 8.6%) and had provided a real rate of return of 5.2% above inflation over the latest 20 year period (Combined Funds 7.4% vs. CPI 2.2%).

The assets increased over the quarter (Combined Funds ending value of $70.0 versus a beginning value of $68.3 billion), due to investment returns which outweighed benefit payments. The Combined Funds matched the benchmark for the quarter (Combined Funds 3.5% vs. Combined Funds-Composite Index 3.5%) and outperformed for the year (Combined Funds 9.8% vs. Combined Funds-Composite Index 9.3%). The Combined Funds exceeded the benchmark return over the three-year period and in all other time periods reported.

Mr. Perry reported that the asset mix, was close to target. He added that by the end of the fiscal year the combined weight of Fixed Income and Treasuries would be at the 20% policy weight approved by the Board. He then reported that the combined public equity performance matched the benchmark during the quarter (Public Equity 5.0% vs. Public Equity Benchmark 5.0%) and outperformed during the year (Public Equity 12.5% vs. Public Equity Benchmark 12.2%). Breaking it down between domestic and international equities, the domestic equity manager group underperformed its benchmark for the quarter (Domestic Equity 7.0% vs. Domestic Equity Benchmark 7.1%), outperformed for the year (Domestic Equity 18.0% vs. Domestic Equity Benchmark 17.6%), but underperformed the benchmark performance over all other time periods except the ten-year period when it outperformed. The international equity manager group underperformed its target for the quarter (International Equity 0.5% vs. International Equity Benchmark 0.7%) and for the year (International Equity 1.5% vs. International Equity Benchmark 1.8%) but outperformed over all remaining time periods except the three-year period when it underperformed. Mr. Perry indicated that the fixed income segment outperformed its benchmark for the quarter (Fixed Income 0.2% vs. Fixed Income Benchmark 0.0%) and the year (Fixed Income -0.7% vs. Fixed Income Benchmark -1.2%) as well as over all other time periods reported. He reported that the Treasury portfolio, matched its target for the quarter (Treasuries -1.5% vs. Treasuries Benchmark -1.5%). He stated that the private market investments contributed to performance for the quarter and the year (Total Private Markets return of 4.2% and 16.3%, respectively) and also over longer time periods. He concluded his report noting that the fund has added value relative to the volatility equivalent benchmark and that the fund has achieved first quartile performance, for each of the periods over the last ten years, in the TUCS universe.

Mr. Perry referred members to Tab B of the meeting materials for the Administrative Report and indicated that the report included the favorable fiscal year-to-date position of the administrative budget as well as staff travel for the quarter. He indicated that Tab B also included summary information with respect to updates on restrictions for Iran and Sudan as well as the IAC and SBI Board meeting dates for calendar year 2019. Mr. Perry reported that the SBI was not involved in any litigation. Lastly, he stated that the legislative auditors were wrapping up their audit and that the SBI would distribute its Annual Report once their opinion was issued.

Mr. Perry referred members to Tab C of the meeting materials and introduced the Commissioner of Minnesota Management and Budget (MMB), Myron Frans, who was there to present Mr. Perry's initiative for the SBI staffing and salary plan. Mr. Frans stated that pursuant to *Minnesota Statute*s, Chapter 43A.18, MMB completed a review of the Compensation Study submitted by the Executive Director on behalf of the SBI. Mr. Frans stated that MMB must review and comment on, within fourteen days of receipt, the SBI's staffing and salary plan before it is submitted to the Board. Mr. Frans stated that MMB had completed their review, Board members had received a copy of the SBI staffing and salary plan, and that MMB recommends adoption of the plan to move forward.

Secretary of State Simon moved and Attorney General Swanson seconded approval of the recommendation which reads: **The Executive Director recommends that the Board approve the revised SBI Salary Administration Plan and to proceed with obtaining necessary approvals to put the revised Salary Administration Plan into effect.** The motion passed unanimously.

Mr. Martin, Chairperson of the Investment Advisory Council (ICA), referred members to Tab D and reviewed the six alternative investment proposals, all of which are with existing managers, brought to the IAC: Blackstone Real Estate Partners IX (Real Estate), TA Realty Realty Associates Fund XII (Real Estate), Strategic Partners Fund VIII (Private Equity), TCW Direct Lending VII (Private Credit), Energy Capital Partners Credit Solutions II (Private Credit), and Merit Energy Partners K (Real Assets).

Attorney General Swanson moved and Secretary of State Simon seconded approval of the six recommendations in Tab D 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 Blackstone Real Estate Partners IX, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by The Blackstone Group upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement,**

further due diligence and negotiations may result in the imposition of additional terms and conditions on The Blackstone Group or reduction or termination of the commitment.

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to $100 million, or 20% of The Realty Associates Fund XII, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by TA Realty 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 TA Realty or reduction or termination of the commitment.

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

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to $100 million, or 20% of Energy Capital Partners Credit Solutions II, whichever is less. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have

any liability for reliance by Energy Capital 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 Energy Capital Partners or reduction or termination of the commitment.

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

State Auditor Otto indicated that the remaining items on the meeting agenda, the AON Market Environment Report, the PCA Investment Market Risk Metrics (report), and the Comprehensive Performance Report, were informational items.

Mr. Perry, on behalf of himself, his staff and the beneficiaries and participants, thanked Governor Dayton, Attorney General Swanson, and State Auditor Otto for their superb service to the state and wished them well as they leave office. The Board members thanked Mr. Perry, the Staff, and the IAC for their service.

State Auditor Otto, on behalf of Governor Dayton who was not present, announced that the Governor had proclaimed December 13, 2018 to be Mansco Perry day. State Auditor Otto read the official Minnesota Proclamation into the record:

"WHEREAS: Mansco Perry III, Executive Director of the Minnesota State Board of Investment (SBI), is responsible for the investment management of pension and other state assets, totaling over $97 billion, which has grown to be the 53rd largest investment fund in the world; and

WHEREAS: Mansco has implemented operational improvements, and developed innovative and effective ideas to enhance investment returns while mitigating portfolio risk; and

WHEREAS: Mansco has generously given his time and talents to benefit the others in our community, currently serving on the Board of Directors of the Minnesota Workers' Compensation Reinsurance Association; and

WHEREAS: Previously, Mansco has served on the Board of Trustees of William Mitchell College of Law, on the Board of Directors of Minnesota Philanthropy Partners, and of Catholic Charities of Saint Paul and Minneapolis, as well as the Investment Advisory Council of the New York State Teachers Retirement System, the Investment Committees of the Sisters of Saint Joseph of the Carondelet and the University of Baltimore Foundation; and

WHEREAS: Mansco Perry is a skillful, thoughtful, and trusted leader, and a long-term strategic investor with an exceptional ability to work in a respectful manner with members and staff of the SBI, the Minnesota Legislature, public pension fund officials, employer and employee groups, as well as all state and public employees and retirees; and

WHEREAS: Mansco is recognized as a leader by his peers, and other investment professionals around the country, and currently serves as President of the National Association of State Investment Officers; and

WHEREAS: Mansco Perry will receive the ***Lifetime Achievement Award*** at the ninth annual Chief Investment Officer Innovation Awards dinner in New York City on December 13, 2018.

NOW, THEREFORE, I, MARK DAYTON, Governor of Minnesota, do hereby proclaim Thursday, December 13, 2018, as: MANSCO PERRY, III DAY in the State of Minnesota."

The meeting adjourned at 10:21 a.m.

Respectfully submitted,

Mansco Perry III

Mansco Perry III
Executive Director and
Chief Investment Officer

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TAB A

Report from the Executive Director

Quarterly
Performance Summary

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Performance Summary

December 31, 2018

Description of SBI Investment Programs

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

Combined Funds

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

Participant Directed Investment Program

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

Non-Retirement

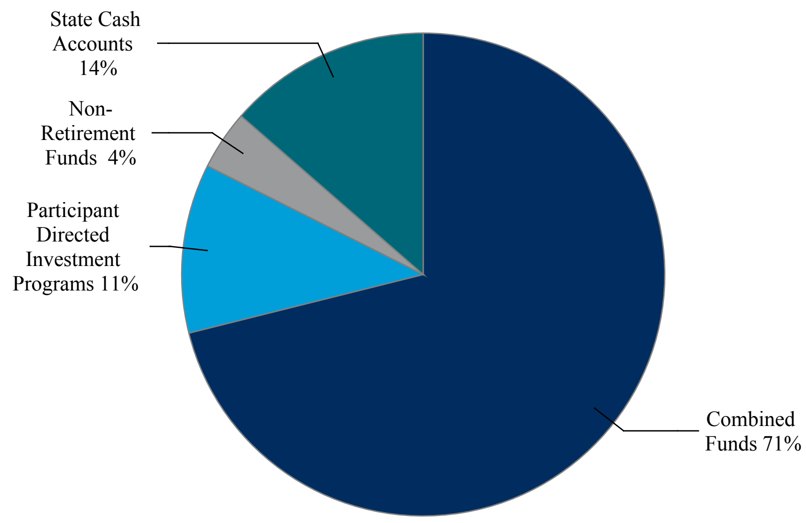
The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

State Cash

The State Cash accounts are cash balances of state government funds including the State General Fund. Most accounts are invested by SBI staff through a short-term pooled fund referred to as the Treasurer's Cash Pool. It contains the cash balances of special or dedicated accounts necessary for the operation of certain State agencies and non-dedicated cash in the State Treasury. Because of special legal restrictions, a small number of cash accounts cannot be commingled.

Funds Under Management

	$ Millions
COMBINED FUNDS	
Combined Funds	$64,107
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	3,660
State Deferred Compensation Plan**	5,201
Minnesota College Savings Plan	1,349
Achieve a Better Life Experience	4
NON-RETIREMENT FUNDS	
Assigned Risk Account	271
Permanent School Fund	1,348
Environmental Trust Fund	1,064
Closed Landfill Investment Fund	84
Miscellaneous	226
Other Post Employement Benefits	596
STATE CASH ACCOUNTS	
Treasurer's Cash	12,007
Other State Cash Accounts	249
TOTAL	
SBI AUM	90,167



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

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

Note: Differentials within column amounts may occur due to rounding

Combined Funds Long Term Objectives

Comparison to Objective

Match or Exceed Composite Index (10 yr.)

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

	10 Year
COMBINED FUNDS	9.9%
COMBINED FUNDS - COMPOSITE INDEX	9.4
Excess	0.5

Provide Real Return (20 yr.)

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

	20 Year
COMBINED FUNDS	6.3%
CPI-U	2.2
Excess	4.1

Note:

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

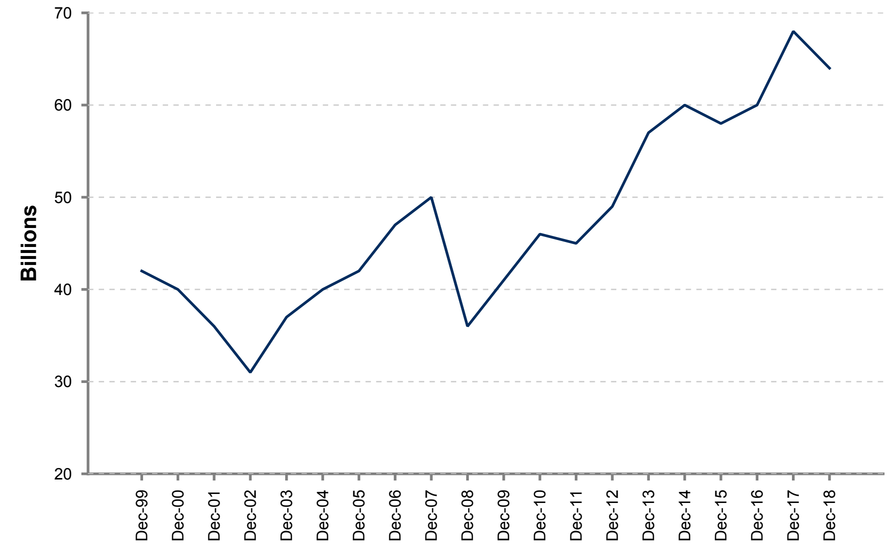
Combined Funds Summary

Combined Funds Change in Market Value ($Millions)

	One Quarter
COMBINED FUNDS	
Beginning Market Value	$70,023
Net Contributions	-554
Investment Return	-5,361
Ending Market Value	64,107

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

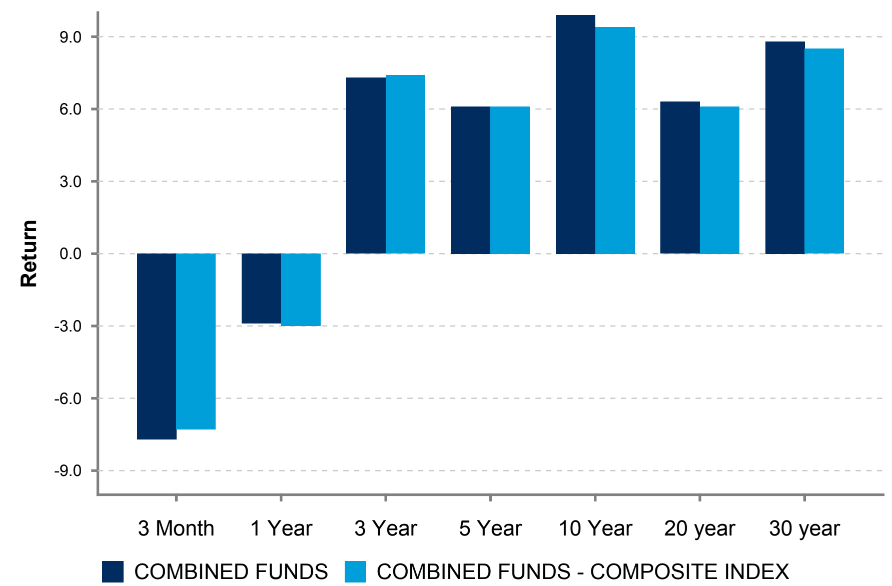
Asset Growth



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	-7.7%	-4.5%	-2.9%	7.3%	6.1%	9.9%	6.3%	8.8%
COMBINED FUNDS - COMPOSITE INDEX	-7.3	-4.1	-3.0	7.4	6.1	9.4	6.1	8.5
Excess	-0.4	-0.4	0.1	-0.0	-0.0	0.5	0.2	0.3

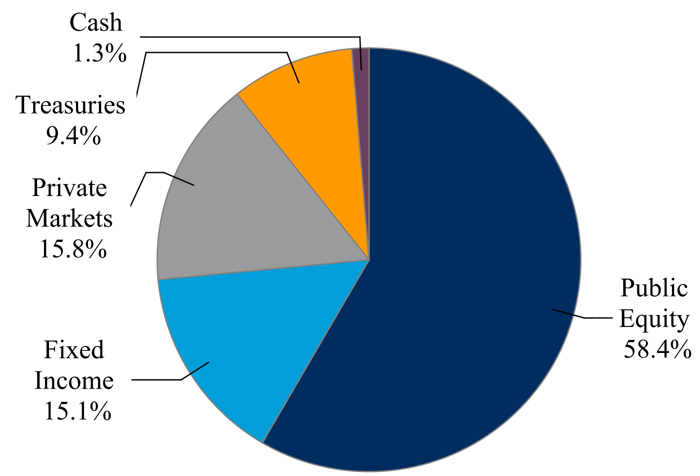


Combined Funds Summary

Asset Mix

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

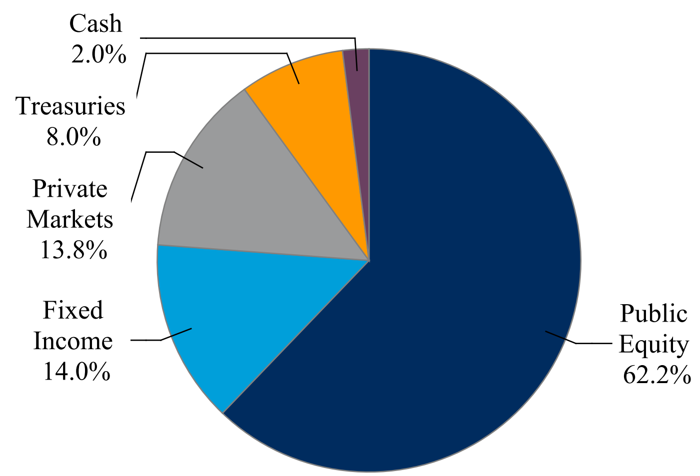
	(Millions)	Actual Mix	Transitional Policy Target
Public Equity	$37,434	58.4%	51.0%
Fixed Income	9,682	15.1	14.0
Private Markets	10,142	15.8	25.0
Treasuries	6,002	9.4	8.0
Cash	846	1.3	2.0
TOTAL	64,107	100.0	



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	62.2%	67% Russell 3000/33% MSCI ACWI ex US
Fixed Income	14.0	BB Barclays U.S. Aggregate
Private Markets	13.9	Private Markets
Treasuries	8.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills



Combined Funds Asset Class Performance Summary

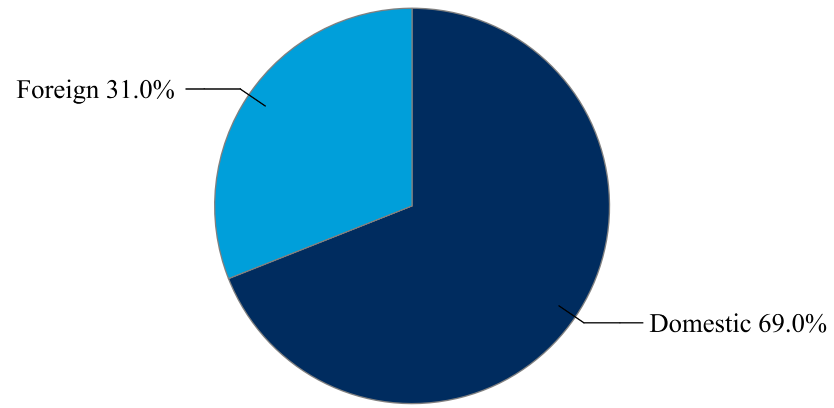
Public Equity

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

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

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

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



	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Public Equity	-13.9%	-9.6%	-8.4%	7.3%	5.8%	11.7%	5.4%	9.1%
Public Equity Benchmark	-13.3	-9.0	-8.2					
Excess	-0.6	-0.6	-0.2					
Domestic Equity	-14.8	-8.8	-5.3	8.6	7.6	13.2	5.6	9.5
Domestic Equity Benchmark	-14.3	-8.2	-5.2	9.0	7.9	13.2	5.8	9.7
Excess	-0.5	-0.6	-0.0	-0.3	-0.3	0.0	-0.2	-0.2
International Equity	-11.8	-11.4	-14.5	3.8	0.9	7.0	4.6	
International Equity Benchmark	-11.5	-10.8	-14.2	4.5	0.7	6.6	4.2	
Excess	-0.4	-0.6	-0.3	-0.6	0.2	0.4	0.4	

Note:

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

Combined Funds Asset Class Performance Summary

Fixed Income

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

The Core Fixed Income benchmark is the Bloomberg Barclays U.S. Aggregate Index. This index reflects the performance of the broad bond market for investment grade (Baa or higher) bonds, U.S. Treasury and agency securities, and mortgage obligations with maturities greater than one year.

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

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Fixed Income	1.1%	1.4%	-0.0%	2.6%	2.9%	4.9%	4.9%	6.4%
Fixed Income Benchmark	1.6	1.7	0.0	2.1	2.5	3.5	4.5	6.1
Excess	-0.5	-0.3	-0.0	0.5	0.4	1.5	0.4	0.3
Treasuries	3.6	2.1						
BBG BARC 5Y + Us Tsy Idx	3.7	2.2						
Excess	-0.1	-0.1						

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	0.5%	1.1%	1.9%	1.2%	0.8%	0.7%	2.3%	3.9%
90 DAY T-BILL	0.6	1.1	1.9	1.0	0.6	0.4	1.9	3.2

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	3.7%	8.0%	15.7%	13.8%	12.0%	10.3%	13.1%	13.6%	12.2%
Private Equity	3.8%	8.9%	17.8%	17.1%	15.7%	13.5%	14.2%	15.4%	
Private Credit	2.3	6.8	13.4	14.6	14.2	12.3	12.8		
Resources	4.7	7.6	12.8	5.6	1.0	4.1	15.2	14.9	
Real Estate	2.4	5.1	11.5	9.6	12.2	5.6	9.0	9.4	

Private Markets

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

Private Equity Investments

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

Private Credit Investments

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

Resource Investments

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

Real Estate Investments

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

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

STATE STREET

SBI Combined Funds Strategic Allocation Category Framework

	12/31/18 ($ millions)	12/31/18 Weights	Category Ranges	
Growth - Appreciation				
Public Equity	$ 37,434.21	58.4%		
Private Equity	$ 5,256.89	8.2%		
Non-Core Real Assets	$ 2,503.66	3.9%		
Distressed/Opportunistic	$ 1,219.32	1.9%		
	$ 46,414.08	**72.4%**	*50%*	*75%*
Growth - Income-oriented				
Core Fixed Income	$ 9,682.19	15.1%		
Private Credit	$ 534.04	0.8%		
Return-Seeking Fixed Income		0.0%		
	$ 10,216.23	**15.9%**	*15%*	*30%*
Real Assets				
Core Real Estate		0.0%		
Real Assets	$ 578.85	0.9%		
	$ 578.85	**0.9%**	*0%*	*10%*
Inflation Protection				
TIPS		0.0%		
Commodities		0.0%		
		0.0%	*0%*	*10%*
Protection				
U.S. Treasuries	$ 6,001.57	9.4%		
	$ 6,001.57	**9.4%**	*5%*	*20%*
Liquidity				
Cash	$ 896.03	1.4%		
	$ 896.03	**1.4%**	*0%*	*5%*
Total	**$ 64,106.76**	**100.0%**		
Illiquid Asset Exposure	**$ 10,092.76**	**15.7%**	*0%*	*30%*

Volatility Equivalent Benchmark Comparison

Periods Ending 12/31/2018

As of (Date):	12/31/2018							
	1-year	*3-year*	*5-year*	*10-year*	*15-year*	*20-year*	*25-year*	*30-year*
SBI Combined Funds Return	**-2.9%**	**7.3%**	**6.1%**	**9.9%**	**7.4%**	**6.3%**	**8.0%**	**8.8%**
Volatility Equivalent Benchmark Return	**-5.8%**	**5.0%**	**3.8%**	**7.2%**	**5.5%**	**4.8%**	**6.3%**	**7.4%**
Value Added	**2.8%**	**2.3%**	**2.3%**	**2.7%**	**1.9%**	**1.5%**	**1.8%**	**1.5%**
Standard Deviation: Benchmark = Combined Funds			**6.7%**	**8.5%**	**8.8%**	**9.3%**	**9.3%**	**9.2%**
Benchmark Stock Weight	**63%**	**63%**	**63%**	**58%**	**58%**	**61%**	**62%**	**62%**
Benchmark Bond Weight	**37%**	**37%**	**37%**	**42%**	**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

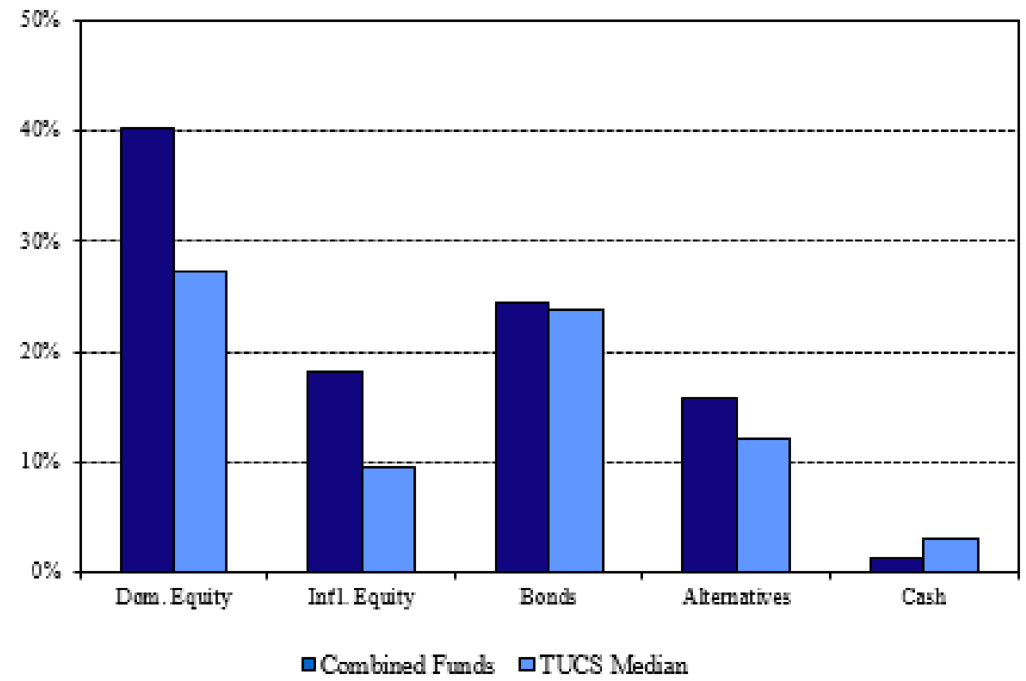
Asset Mix Compared to Other Pension Funds

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	37,434	58.4
Fixed Income	9,682	15.1
Treasuries	6,002	9.4
Private Markets	10,142	15.8
Cash	846	1.3
TOTAL	64,107	100.0



	Domestic Equity	International Equity	Bonds	Alternatives	Cash
Combined Funds	40.3%	18.1%	24.5%	15.8%	1.3%
Median in TUCS	27.2%	9.6%	23.8%	12.1%	3.1%

STATE STREET.

Combined Funds Summary

Performance Compared to Other Pension Funds

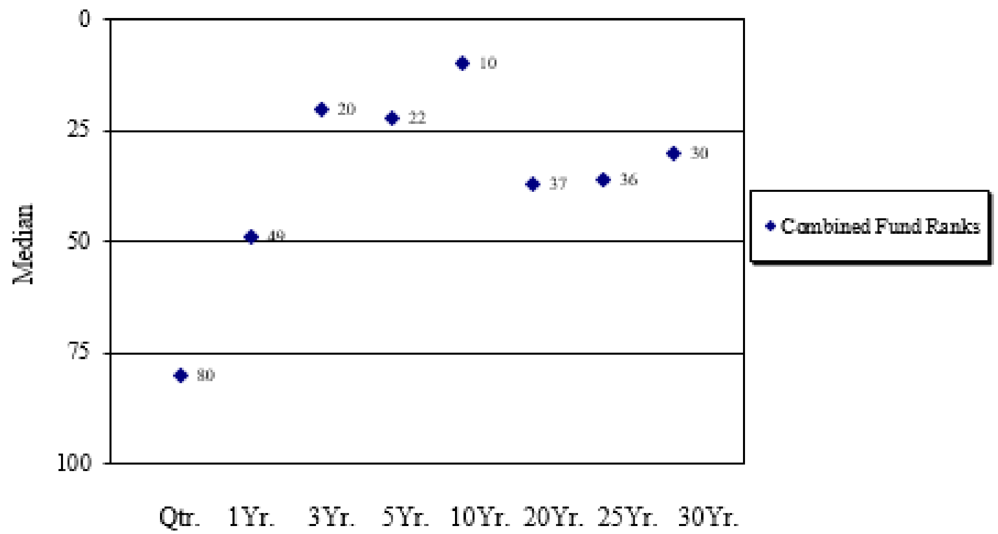
While the SBI is concerned with how its returns compare to other pension investors, universe comparisons should be used with great care. There are several reasons why such comparisons will provide an "apples to oranges" look at performance:

- Differing Allocations. Asset allocation will have a dominant effect on return. The allocation to stocks among the funds in TUCS typically ranges from 20-90%, a very wide range for meaningful comparison. In addition, it appears that many funds do not include alternative asset holdings in their reports to TUCS. This further distorts comparisons among funds.

- Differing Goals/Liabilities. Each pension fund structures its portfolio to meet its own liabilities and risk tolerance. This will result in different asset mix choices. Since asset mix will largely determine investment results, a universe ranking is not relevant to a discussion of how well a plan sponsor is meeting its long-term liabilities.

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

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



Periods Ended 12/31/2018

	Qtr	1 Yr	3 Yrs	5 Yrs	10 Yrs	20 Yrs	25 Yrs	30 Yrs
Combined Funds Percentile Rank in TUCS	80th	49th	20th	22nd	10th	37nd	36th	30th

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TAB B

Report from the Executive Director

Administrative Report

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EXECUTIVE DIRECTOR'S ADMINISTRATIVE REPORT

DATE: February 21, 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 December 31, 2018 is included as **Attachment A**.

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

2. FY18 Audit Report

The Legislative Auditor letter related to the financial audit of the State Board of Investment financial operations for Fiscal Year 2018 is included as **Attachment C**. The Office of the Legislative Auditor (OLA) had no written findings or recommendations for the SBI.

3. FY18 Annual Report

The Fiscal Year 2018 Annual Report was distributed January 2019.

4. Legislative Update

I will present a verbal update on any legislation activity of interest to the SBI.

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 fourth quarter, SBI managers sold 423,598 shares in four companies on the divestment list.

On December 26, 2018, 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.

6. Iran Update

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

SBI receives information on companies with Iran operations from Institutional Shareholder Services, Inc. (ISS). Staff receives monthly reports from the SBI's custodian bank concerning SBI holdings of companies on the restricted list and writes letters as required by the law.

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

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

- 100% within fifteen months after the company appeared on the scrutinized list.

In the fourth quarter, SBI managers sold 52,536 shares in three companies on the divestment list.

On January 24, 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.

7. Litigation Update

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

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ATTACHMENT A

STATE BOARD OF INVESTMENT
FISCAL YEAR 2019 ADMINISTRATIVE BUDGET REPORT
FISCAL YEAR TO DATE THROUGH DECEMBER 31, 2018

ITEM	FISCAL YEAR 2019 BUDGET	FISCAL YEAR 2019 12/31/2018
PERSONNEL SERVICES		
FULL TIME EMPLOYEES	$ 5,031,000	$ 1,827,652
PART TIME EMPLOYEES	0	0
MISCELLANEOUS PAYROLL	100,000	0
SUBTOTAL	**$ 5,131,000**	**$ 1,827,652**
STATE OPERATIONS		
RENTS & LEASES	285,000	163,363
REPAIRS/ALTERATIONS/MAINTENANCE	14,000	5,208
PRINTING & BINDING	10,000	4,375
PROFESSIONAL/TECHNICAL SERVICES	145,000	67,160
COMPUTER SYSTEMS SERVICES	162,500	98,297
COMMUNICATIONS	36,000	12,540
TRAVEL, IN-STATE	1,000	168
TRAVEL, OUT-STATE	125,000	41,567
SUPPLIES	30,000	10,722
EQUIPMENT	17,500	18,761
EMPLOYEE DEVELOPMENT	117,000	73,324
OTHER OPERATING COSTS	140,000	58,955
INDIRECT COSTS	250,000	135,550
SUBTOTAL	**$ 1,333,000**	**$ 689,990**
TOTAL ADMINISTRATIVE BUDGET	**$ 6,464,000**	**$ 2,517,642**

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ATTACHMENT B

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel October 1, 2018 - December 31, 2018

Purpose	Name	Destination and Date	Total Cost
Manager Monitoring **Private Markets Managers:** TA Realty; Landmark Partners **Manager Search** **Private Markets Managers:** Great Hill Partners; Intercontinental **Conference:** Pension Real Estate Association (PREA) Annual Insitutional Investor Conference	J. Stacy	Boston, MA 10/2-10/5	$ 1,585.81
Conference: National Association of State Investment Officers (NASIO) Conference	M. Perry	Grand Rapids, MI 10/7-10/10	3,121.24
Manager Monitoring **Private Markets Managers:** Avenue Capital; Blackstone Capital Partners; Dyal Capital Partners	A. Krech	New York, NY 10/15-10/18	1,955.90
Manager Monitoring **Private Markets Manager:** Rockpoint Group **Manager Search** **Private Markets Manager:** Gryphon Investors; GI Partners; Genstar Capital	J. Stacy	San Francisco, CA 10/15-10/17	668.58

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel October 1, 2018 - December 31, 2018

Purpose	Name	Destination and Date	Total Cost
Manager Search **Private Markets Managers:** Audax; TCW **Manager Search** **Private Markets Managers:** Bain Capital	C. Boll	Boston, MA 10/16-10/17	$ 846.95
Conference: Public Pension Financial Forum (P2F2)	S. Baribeau	Savannah, GA 10/20-10/24	1,900.53
Conference: Public Pension Financial Forum (P2F2)	P. Anderson	Savannah, GA 10/20-10/24	1,846.88
Conference: Council of Institutional Investors Fall 2018 Conference	J. Mulé	New York, NY 10/23-10/25	1,046.66
Manager Monitoring **Emerging Markets Manager:** Earnest Partners **Manager Search** **Fixed Income Managers:** Angel Oak Capital; Invesco	A. Griga	Atlanta, GA 10/29-10/30	1,044.05
Manager Monitoring **Private Markets Manager:** BlackRock (BlackRock Real Assets Forum)	N. Blumenshine	Chicago, IL 10/29-10/30	511.03

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel October 1, 2018 - December 31, 2018

Purpose	Name	Destination and Date	Total Cost
Manager Monitoring **Private Markets Managers:** Lexington Partners **Conference:** Institutional Limited Partners Association (ILPA) Summit	J. Stacy	New York, NY 11/6-11/8	$ 1,462.52
Manager Monitoring **Private Markets Managers:** Lexington Partners Annual Meeting; Lexington Partners Co-Investment Partners Annual Meeting; **Manager Search** **Private Markets Managers:** Atalaya Capital Management; Centerbridge Capital Partners	P. Ammann	New York, NY 11/6-11/8	1,305.84
Manager Monitoring **Private Markets Managers:** Brookfield (Brookfield Private Funds Annual Investor Conference) **Manager Search** **Private Markets Managers:** Aurora Capital Partners	J. Stacy	Los Angeles, CA Beverly Hills, CA 11/12-11/14	1,504.42
Manager Monitoring **Private Markets Managers:** Banc Funds; Madison Dearborn; Prudential **Consultant Monitoring:** Aon Hewitt Investment Consulting Inc.	C. Boll	Chicago, IL 11/13-11/14	734.98

STATE BOARD OF INVESTMENT

Travel Summary by Date
SBI Travel October 1, 2018 - December 31, 2018

Purpose	Name	Destination and Date	Total Cost
Manager Monitoring **Private Markets Managers:** Thomas H. Lee Annual Meeting; Summit Partners **Master Custodian Monitoring:** State Street Corporation	N. Blumenshine	Boston, MA Quincy, MA 11/13-11/16	$ 611.02
Manager Monitoring **Private Markets Managers:** Energy Capital Partners; Goldman Sachs; Welsh Carson Anderson Stowe	A. Krech	New York, NY 11/13-11/16	1,867.30
Manager Monitoring **Private Markets Manager:** Adams Street Partners; **Manager Monitorting** **Public Markets Manager:** Neuberger Berman Investment Advisors	M. Perry	Chicago, IL 11/14-11/15	756.22
Manager Monitoring **Private Markets Manager:** BlackRock **Manager Monitoring** **Public Markets Manager:** Goldman Sachs **Conference:** Influential Investors Forum	M. Perry	New York, NY 12/12-12/14	549.21

O L A **OFFICE OF THE LEGISLATIVE AUDITOR**
STATE OF MINNESOTA • James Nobles, Legislative Auditor

February 7, 2019

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

Dear Mr. Perry:

The Office of the Legislative Auditor has completed its audit of certain financial activities at the Minnesota State Board of Investment. This work supports our audit of the State of Minnesota's financial statements for the year ended June 30, 2018. The primary objective of the audit is to render an opinion on the State of Minnesota's financial statements, which will be included in the *Comprehensive Annual Financial Report,* prepared by the Department of Management and Budget. The work in your department also supports our audit opinions on the financial statements of the three state retirement systems: Minnesota State Retirement System, Public Employees Retirement Association, and Teachers Retirement Association. This is not a comprehensive audit of the Minnesota State Board of Investment.

In planning and performing this audit, we considered SBI's internal control system to determine the audit procedures that are appropriate. We gained an understanding, but did not test SBI's internal control. As part of this audit, we also reviewed certain investment related financial activity presented in the financial statements and notes to the financial statements for the State of Minnesota and the three state retirement systems. This activity includes, but is not limited to, investment balances, investment fees, and securities lending.

On December 14, 2018, we issued an unqualified (clean) opinion on the State of Minnesota's *Comprehensive Annual Financial Report* for the fiscal year ended June 30, 2018. In addition, we issued an unqualified (clean) opinion on the financial statements of each of the three state retirement systems. We also provided the state and three state retirement systems with a report on the Internal Control over Financial Reporting. For the fiscal year ending June 30, 2018, we had no written findings or recommendations directed toward the Minnesota State Board of Investment in the report to the Department of Management and Budget and to the pension plans.

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

Sincerely,

Tracy Gebhard

Tracy Gebhard, CPA
Audit Director

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

Room 140 Centennial Building, 658 Cedar Street, St. Paul, Minnesota 55155-1603 • Phone: 651-296-4708 • Fax: 651-296-4712
E-mail: legislative.auditor@state.mn.us • Website: www.auditor.leg.state.mn.us • Minnesota Relay: 1-800-627-3529 or 7-1-1

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TAB C

Report from the Executive Director

Proposal for Minnesota College Savings Plan (529 Plan) Contract

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EXECUTIVE DIRECTOR'S ADMINISTRATIVE REPORT

DATE: February 21, 2019

TO: Members, State Board of Investment

FROM: Investment Advisory Council and SBI Staff

SUBJECT: Proposal for Minnesota College Savings Plan (529 Plan) Contract

The SBI is responsible for assisting the Office of Higher Education (OHE) in selecting a vendor or vendors to provide administrative, marketing and investment services for the state's College Savings Plan (the Plan), an Internal Revenue Code (IRC) section 529 plan. The current contract expires August 31, 2019. TIAA-CREF Tuition Financing, Inc. (TFI), an affiliate of TIAA, is the current vendor offering all services for the Plan.

Summary of the RFP process and response:

SBI Staff worked with OHE in writing and distributing a request for proposal. One response was received from the current vendor, TFI.

OHE and SBI staff evaluated the response and drew the following observations:

- TFI has a significant presence in the 529 market.
- TFI has provided excellent service in administering the Plan and in working closely with the staffs at the SBI and OHE.
- TFI's proposal has significant cost reductions to the current plan. (See **Attachment A** for more details.)
- TFI's proposal meaningfully enhances the managed allocation option which will provide a smoother glide path as the child ages. (See **Attachment A** for more details.)

Based on improvements to the managed allocation option, a significant reduction to the cost structure, continued satisfactory performance and service, staff recommends that a new five year contract be entered into with TFI for the 529 Plan.

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from legal counsel, to work with the Office of Higher Education to negotiate and execute a new five year contract with TIAA-CREF Tuition Financing, Inc. to provide services for the Minnesota College Savings Plan.

Cost Reductions:

- The TFI proposal is not recommending any changes to the Plan's current overall investment structure. However, TFI is proposing to move to lower cost underlying mutual funds in order to reduce the investment management expenses to participants.

- In addition, TFI has proposed lowering its administration fee (Plan Manager Fee) to 10 bps from the current 14 bps, a 29% reduction from TFI's current administration fee.

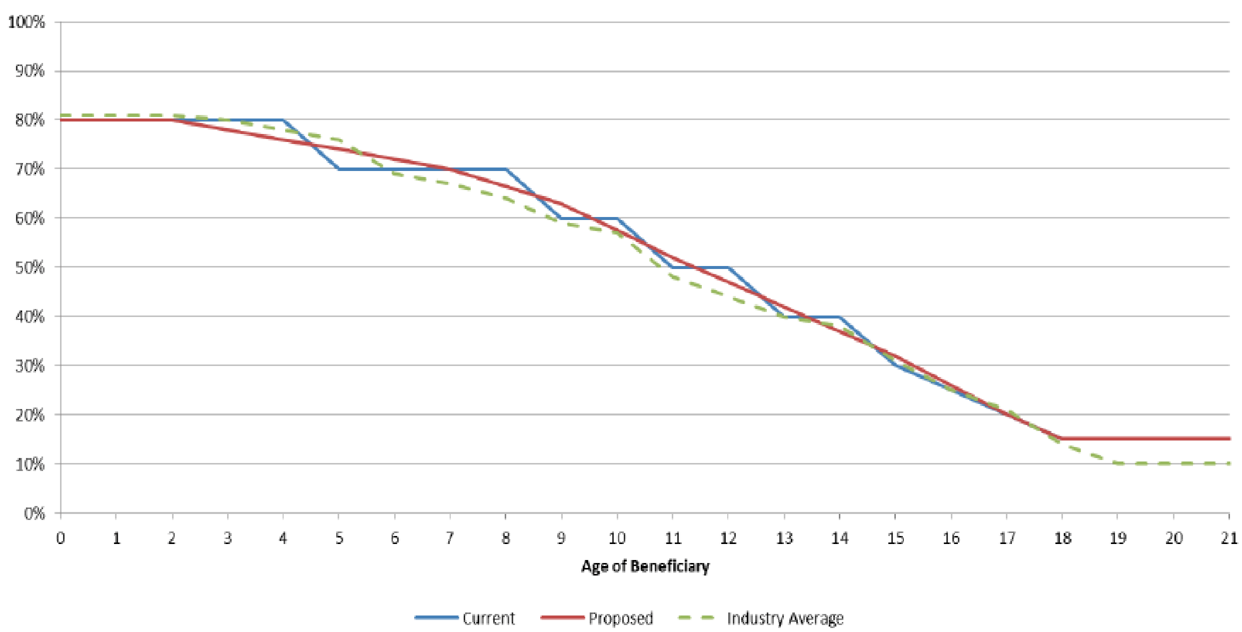
- The proposed TFI administrative fee reduction in combination with the reduction to investment fund expenses results in an average asset based fee of 15 bps from the current 23.5 bps, which represents a 36% reduction in the Plan's current pricing.

Enhancements to Managed Allocation Option:

- The Managed Allocation Option, which allows a participant to select an appropriate investment portfolio based on the initial age of the child and have it automatically adjust as the child ages, holds the majority of the Plan's assets. Given the importance of this option to the Plan, TFI is proposing a structural change to this option that will change from offering nine "age-based" portfolios to offering eleven "enrollment-based" portfolios.

- The proposed enrollment-based portfolios will act like target date funds* used by defined contribution retirement plans, with more frequent and gradual asset class shifts compared to the asset allocation shifts that occur in the current nine age-based portfolios. This adds a layer of risk mitigation that may improve participant results – especially during periods of extreme market events. (See graph below.)

Glide path equity comparison of the Managed Allocation option.



*A target date fund is used in defined contribution retirement plans and is designed for investors expecting to retire around the year indicated in the fund's name. Each target date fund is a diversified mix of stocks, bonds and other investments that automatically becomes more conservative as the target date (or retirement date) nears.

TAB D

Report from the Executive Director

Report from the Proxy Committee

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DATE: February 21, 2019

TO: Members, State Board of Investment

FROM: Proxy Committee

1. Reauthorization of the Proxy Committee

In March 1982, the Board established the Proxy Committee to carry out the SBI's voting responsibilities. As a stockholder, the Minnesota State Board of Investment (SBI) is entitled to sponsor and cosponsor shareholder resolutions and participate in corporate annual meetings by casting its votes by proxy or through direct attendance at the meetings. Each Board member has one designee on the Committee. The current membership is:

Karl Procaccini	Governor's designee
Ramona Advani	State Auditor's designee
Bert Black	Secretary of State's designee
Christie Eller	Attorney General's designee

According to statute, committees of this nature must be re-authorized every two years. The last authorization was in February 2017. A resolution to accomplish this is **Attachment A**.

RECOMMENDATION:

The Executive Director recommends that the SBI adopt the resolution which reauthorizes the Proxy Committee and delegates proxy voting responsibilities according to established guidelines.

2. Proxy Voting Guidelines

The Proxy Committee votes the Board's proxies according to the Proxy Voting Guidelines approved by the Board. The Committee recommends that the Board review and reaffirm the Proxy Voting Guidelines as shown in **Attachment B.**

RECOMMENDATION:

The Proxy Committee and the Executive Director recommend that the SBI reaffirm the Proxy Voting Guidelines.

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ATTACHMENT A

RESOLUTION OF THE
MINNESOTA BOARD OF INVESTMENT
CONCERNING PROXY VOTING

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

WHEREAS, the SBI has previously established a Proxy Committee:

NOW THEREFORE, BE IT RESOLVED THAT:

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

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

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

4. This resolution shall take effect immediately.

Adopted this 1st day
of March, 2019

____
Governor Tim Walz
Chair, Minnesota
State Board of Investment

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Proxy Voting Guidelines

The Minnesota State Board of Investment (SBI) has formulated proxy voting guidelines by which it casts votes on a wide range of corporate governance and social responsibility issues. As a shareholder, the Board is entitled to participate in corporate annual meetings by casting its votes by proxy or through direct attendance at the meetings. The SBI has standing rights as a shareholder and has the ability, as a shareholder, to influence corporate and governmental entities to act responsibly through constructive engagement. This includes (but is not limited to) shareholder proposals, shareholder sign-on letters, and supporting policy initiatives for transparency.

One of the SBI's Investment Beliefs states: "Utilizing engagement initiatives to address environmental, social and governance-related ('ESG') issues can lead to positive portfolio and governance outcomes. In addition to specific engagement strategies the SBI might apply, proxy rights that are attached to shareholder interests in public companies are 'plan assets' of the SBI and represent a key mechanism for expressing SBI's positions relating to specific ESG issues. By taking a leadership role in promoting responsible corporate governance through the proxy voting process, the SBI can contribute significantly to implementing ESG best practices which should, in turn, add long-term value to SBI's investments."

The SBI supports and prefers the use of constructive engagement to further ESG goals where possible, and has adopted Proxy Voting Policies for this purpose. The following guidelines constitute an effort by the SBI to manage and control its proxy voting and engagement.

Overview of the SBI

By the Minnesota Constitution, the Board is composed of the Governor, the State Auditor, the Secretary of State, and the Attorney General. The Board employs a professional staff to carry out its policies. The Board and staff are assisted by a seventeen member Investment Advisory Council.

The SBI invests the pension assets of the three statewide public employee retirement systems:

- Minnesota State Retirement System (MSRS)
- Public Employees Retirement Association (PERA)
- Teachers Retirement Association (TRA)

The SBI also invests state government funds and assets of several trust funds.

Statutory Purpose

According to statute, state assets are to be responsibly invested by the SBI to maximize the total rate of return without incurring undue risk.[1] Only a small portion of the SBI's equity holdings are in non-pension accounts. The focus, therefore, of the SBI's proxy voting activities is the extensive domestic and international equity holdings within the pension asset portfolios.

Fiduciary Responsibility

As fiduciaries of pension assets, members of the Board and the executive director owe a fiduciary duty to the members of the plans, to the taxpayers of the state and political subdivisions who help to finance the plans, and to the State of Minnesota.[2]

In addition to the general standard of fiduciary conduct, members of the Board, the executive director, the members of the Investment Advisory Council, staff, and members of Board committees must carry out their duties in accordance with the prudent person standard as articulated in statute.[3]

Voting Process

The Board recognizes its fiduciary responsibility to cast votes on proxy issues. The Board delegates proxy voting responsibilities to its Proxy Committee. Each Board member appoints one member to the Proxy Committee. The four member Committee meets only if it has a quorum and casts votes on proxy issues based on a majority vote of those present. In the unusual event that it reaches a tie vote or a quorum is not present, the Committee will cast a vote to abstain.

The Committee has formulated guidelines by which it casts votes and may engage with public corporations on a wide range of corporate governance, environmental, and social responsibility issues. These guidelines encompass both domestic and international proxy issues. Each year the Committee reviews existing guidelines and determines which issues it will review on a case-by-case basis. The Proxy Committee also may review certain corporate governance issues pertaining to companies headquartered in Minnesota.

Domestic voting: The SBI directly votes shares held in all domestic equity manager portfolios.

International voting: The SBI delegates to international equity managers the voting of shares held in the managers' portfolios following the Proxy Voting Guidelines, where feasible. The SBI believes that several factors affecting the voting of international proxies, including time constraints and lack of company specific information, support the conclusion that the SBI's international equity managers can more efficiently and effectively vote the proxies in their portfolios.

Corporate Governance Issues

Routine Matters

In general, the SBI **supports** management on routine matters of corporate governance. These issues include:

- uncontested election of directors.
- selection of auditors and approval of financial statements.
- management proposals on non-executive compensation issues including savings plans and stock options.
- limits on director and officer liability or increases in director and officer indemnification permitted under the laws of the state of incorporation.

The SBI directs the Proxy Committee, at its discretion, to review the positions taken by directors and withhold votes from or vote against some or all of the directors standing for election if they have taken positions on issues which are potentially not in the best interests of shareholders.

Shareholder Rights

In general, the SBI **opposes** proposals that would restrict shareholder ability to effect change. Such proposals include:

- instituting supermajority requirements to ratify certain events.
- creating classified boards.
- barring shareholders from participating in the determination of the rules governing the board's actions, such as quorum requirements and the duties of directors.
- prohibiting or limiting shareholder action by written consent.
- granting certain stockholders superior voting rights over other stockholders.

In general, the SBI **supports** proposals that preserve shareholder rights to effect change. Such proposals include:

- having boards of directors comprised of a majority of independent directors.
- having compensation committees comprised entirely of independent directors.
- requiring shareholder approval of poison pill plans.
- repealing classified boards.
- adopting secret ballot of proxy votes.
- reinstating cumulative voting.
- adopting anti-greenmail provisions.

Executive Compensation In general, the SBI **supports** efforts to have executive compensation linked to a company's long-term performance and to encourage full disclosure of compensation packages for principal executives. Accordingly, the SBI evaluates compensation packages on a case-by-case basis, including compensation agreements that are contingent upon corporate change in control.

Buyouts In general, the SBI **supports** friendly takeovers and management buyouts.

Special Cases The SBI evaluates the following proposals on a case-by-case basis:

- hostile takeovers.
- recapitalization plans.
- contested election of directors.

Environmental and Social Responsibility Issues

In general, the SBI **supports** proposals that require a company to report or disclose to shareholders company efforts concerning a variety of social responsibility issues. The SBI supports proposals addressing environmental, social, and workforce issues if they seek to further responsible corporate citizenship while at the same time preserving and enhancing long-term shareholder value. The SBI typically supports proposals that ask for disclosure reporting of information not available outside the company that is not proprietary in nature. In the past, these reporting proposals have included issues such as affirmative action programs, animal testing procedures, and nuclear plan safety procedures. Such reporting is most vital when it appears that a company has not adequately addressed shareholder concerns regarding social, workplace, environmental and/or other issues, and when such information is deemed material to the business. The Committee considers whether the request is relevant to the company’s core business and in-line with industry practice on a case-by-case basis. The proponent of the proposal must make the case that the benefits of additional disclosure outweigh the costs of producing the report.

In general, the SBI **opposes** proposals that require a company to institute a specific business action. Proposals requesting that the company cease certain actions that the proponent believes are harmful to society or some segment of society will be evaluated on a case-by-case basis. Special attention will be directed to the company’s legal and ethical obligations, its ability to remain profitable, and potential negative publicity. A high standard will need to be met by proponents requesting specific action such as divesture of a business line or operation, legal remuneration, or withdrawal from certain high-risk markets.

The following sections provide managers with guidance on specific proposals that may occur. Environmental and social shareholder-sponsored proposals continue to evolve. Issues that are not specifically addressed in the following guidelines should be evaluated using the framework delineated above.

Tobacco

The SBI supports shareholder proposals that call for a company to reduce its involvement in tobacco production, product marketing and other related lines of business in order to diversify its business in a manner that will reduce or eliminate potential liability to legal claims associated with tobacco that may negatively impact the value of the SBI's holdings.

In furtherance of this policy, the SBI has sponsored and co-sponsored shareholder proposals to reduce youth access to tobacco products, to request companies to voluntarily comply with FDA regulations, to eliminate smoking in restaurants, and other tobacco related issues.

Northern Ireland

The SBI **supports** proposals that call for the adoption of the MacBride Principles as a means to encourage equal employment opportunities in Northern Ireland.

The SBI **supports** proposals that request companies to submit reports to shareholders concerning their labor practices or their sub-contractors' labor practices in Northern Ireland.

In addition to casting proxy votes, the SBI has sponsored and cosponsored Northern Ireland proposals as required by *Minnesota Statutes*, Section 11A.241.

Environmental Protection/ Awareness And Climate Change

In general, the SBI **supports** proposals that require a corporation to report or disclose to shareholders company efforts in the environmental arena, seek to improve a company's environmental practices to protect the world's natural resources, or address climate change. Proposals that request the adoption of various environmental policies are evaluated on a case-by-case basis.

Sudan

Minnesota Statutes, Section 11A.243 requires the SBI to make its best efforts to identify all "scrutinized companies" with operations in Sudan in which the SBI has direct or indirect holdings or could possibly have holdings in the future. The SBI will engage each scrutinized company. The legislation calls for the SBI to: encourage companies with inactive business operations to continue to refrain from initiating active operations; and to notify companies with active business operations that it may be subject to divestment by the State Board of Investment. In general, the SBI **supports** proposals consistent with this legislation.

Iran

Minnesota Statutes, Section 11A.244 requires the SBI to make its best efforts to identify all "scrutinized companies" with operations in Iran in which the SBI has direct or indirect holdings or could possibly have holdings in the future. The SBI will engage each scrutinized company. The legislation calls for the SBI to notify companies with active business operations that it may be subject to divestment by the State Board of Investment. In general, the SBI **supports** proposals consistent with this legislation.

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1 *Minnesota Statutes*, Section 11A.01.
2 *Minnesota Statutes*, Section 356A.04, subdivision 1.
3 *Minnesota Statutes*, Section 11A.09, and Section 356A.04, subdivision 2.

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TAB E

Report from the Executive Director

Report from the Investment Advisory Council Membership Committee

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DATE: February 21, 2019

TO: Members, State Board of Investment

FROM: IAC Membership Review Committee

On February 19, 2019, the Investment Advisory Council (IAC) Membership Review Committee of the Minnesota State Board of Investment (MSBI) met to review applications for IAC membership. The Committee is comprised of the designees of the Governor (Karl Procaccini), State Auditor (Ramona Advani), Secretary of State (Bert Black) and Attorney General (Christie Eller). Mr. Procaccini served as Chair.

The term of four members of the Investment Advisory Council have expired and there was one vacant member position on the Council. The four members were as follows:

Mr. Kerry Brick	Manager, Pension Investments Cargill, Inc.
Mr. Dennis Duerst	President 3M Investment Management Director, Benefit Fund Investments 3M Company
Mr. Gary Martin	Chief Investment Officer Macalester College
Mr. Malcolm McDonald	Director & Corporate Secretary (Retired) Space Center, Inc.

Mr. Brick, Mr. Duerst, and Mr. Martin each have submitted an application for reappointment to the IAC.

In addition, the Committee received five new applications for membership to the Council. The new applicants are as follows:

Ms. Jessica Lynn Filiaggi	Financial Advisor and Compliance Officer Cetera Advisors Network and Great River Federal
Mr. Stephen James Fisher	Senior Financial Consultant UnitedHealth Group
Mr. David Frary	IBEW Local Union #292 Pension Fund and Healthcare Fund Trustee
Mr. Ferdinand Mabeya	Production Operations BTD Manufacturing
Mr. Daniel John McConnell	Business Manager Minneapolis BCTC
Ms. Nancy C. Orr	Chief Investment Officer Fiduciary Counselling, Inc.

After reviewing all the applications, the Committee is making the following recommendations.

RECOMMENDATIONS:

The Committee recommends that the Board reappoint the following as members of the Investment Advisory Council, with terms expiring in January 2023:

Mr. Kerry Brick
Mr. Dennis Duerst
Mr. Gary Martin

The Committee recommends that the Board appoint the following as members to the Investment Advisory Council, with terms expiring in January 2023:

Mr. Daniel John McConnell
Ms. Nancy C. Orr

TAB F

Investment Advisory Council Report

Private Markets Program

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INVESTMENT ADVISORY COUNCIL REPORT

DATE: February 21, 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:

Real Estate	Rockpoint Group	Fund VI	$100 Million
Private Equity	Blackstone Group	Capital Partners VIII	$150 Million
Private Equity	Advent International	GPE IX	$150 Million
Private Equity	Summit Partners	Growth Equity X	$150 Million
Private Equity	Oak Hill Capital	Fund V	$100 Million
Distress/Opp.	Värde Partners	Fund XIII	$150 Million

New Managers:

Private Equity	Arsenal Capital Partners	Fund V	$100 Million

SBI action is required on item B.

A. Status of SBI Current Private Markets Commitments

Minnesota State Board of Investment

Combined Funds

December 31, 2018

Combined Funds Market Value	$64,106,760,448
Amount Available for Investment	**$3,096,659,535**

	Current Level	Target Level	Difference
Market Value (MV)	$10,092,707,915	$16,026,690,112	$5,933,982,197
MV +Unfunded	$19,340,706,622	$22,437,366,157	$3,096,659,535

Asset Class	Market Value	Unfunded Commitment	Total
Private Equity	$5,256,886,474	$5,449,213,963	$10,706,100,437
Private Credit	$534,041,417	$1,005,818,501	$1,539,859,918
Real Assets	$2,320,348,102	$805,393,908	$3,125,742,010
Real Estate	$762,116,154	$1,248,909,886	$2,011,026,040
Distressed/Opportunistic	$1,219,315,768	$738,662,449	$1,957,978,217
Total	$10,092,707,915	$9,247,998,707	$19,340,706,622

Cash Flows

December 31, 2018

Calendar Year	Capital Calls	Distributions	Net Invested
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)
2014	$1,378,984,263	($2,133,698,037)	($754,713,774)

B. Consideration of New Investment Commitments

ACTION ITEMS:

1) **Investment with an existing real estate manager, Rockpoint Group, (“Rockpoint”), in Rockpoint Real Estate Fund VI, L.P. (“Fund VI”).**

   Rockpoint is forming Fund VI to acquire high-quality properties located in gateway coastal markets with opportunities to increase value through aggressive asset management, revenue enhancement, and expense reduction. Rockpoint expects that Fund VI will focus primarily on office, multifamily, and hospitality investments which are asset classes in which Rockpoint has long-standing experience.

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

   More information on Fund VI 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 Rockpoint Real Estate Fund VI, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Rockpoint Group upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Rockpoint Group or reduction or termination of the commitment.

2) **Investment with an existing private equity manager, The Blackstone Group (“Blackstone”), in Blackstone Capital Partners VIII (“BCP VIII”).**

   Blackstone is forming Blackstone Capital Partners VIII, a private investment fund that will make control and control oriented private equity investments on a global basis. The Fund’s focus will be on large scale and complex transactions, primarily in the United States and Western Europe, and on a more limited basis in other regions such as Asia. Blackstone’s investment strategy is intended to be flexible and nimble, adapting to the best risk/reward opportunities across sectors and geographies at various points of the economic cycle.

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

3) **Investment with an existing private equity manager, Advent International, in Advent International GPE IX, L.P. ("GPE IX").**

Advent International is seeking investors for a new private equity fund which intends to invest primarily in companies across the developed private equity markets of Europe and North America, and selectively on a global basis in markets such as Asia, where Advent has established local professionals and investment experience. GPE IX will focus on control-oriented investments in well-positioned companies in the following five core sectors: business & financial services; healthcare; industrial; retail, consumer & leisure; and technology, media and telecom. Advent seeks investment opportunities where the firm can drive earnings growth and create value though operational improvement.

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

More information on GPE IX 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 $150 million, or 20% of Advent International GPE IX, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. Approval of this potential commitment is not intended to be, and does not constitute in

any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Advent International upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Advent International or reduction or termination of the commitment.

4) **Investment with an existing private equity manager, Summit Partners ("Summit"), in Summit Partners GE X, L.P. ("GE X").**

Summit Partners has formed Summit Partners GE X to invest primarily in U.S. growth equity opportunities. Summit's principal growth equity investment objective is to achieve significant long-term capital appreciation with controlled risk by seeking to invest in category-leading growth companies. The Firm's investment capital is typically used to support strategic growth initiatives, to fund acquisition strategies and to provide liquidity for existing owners. The Summit growth equity team seeks to identify and partner with companies within three primary sectors: Technology, Healthcare and Life Sciences, and Growth Products and Services, which includes Business Services, Financial Services, Consumer, Industrial Technology, and other growth industries.

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

More information on GE X 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 $150 million, or 20% of Summit Partners GE X, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Summit Partners upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Summit Partners or reduction or termination of the commitment.

5) **Investment with an existing private equity manager, Oak Hill Capital Management ("Oak Hill"), in Oak Hill Capital Partners V ("Fund V").**

Oak Hill is forming Fund V to make equity investments of $100 million to $300 million in North American middle-market companies in the following sectors: (i) Consumer, Retail & Distribution; (ii) Industrials; (iii) Media & Communications; and (iv) Services. In order to unlock financial and strategic value over the course of an investment, Oak Hill typically focuses on initiatives that are expected to have the largest impact on company performance, including operational improvement, strategic repositioning, and mergers & acquisitions.

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

More information on Oak Hill Capital Partners V is included as **Attachment E beginning on page 25.**

RECOMMENDATION:

The Investment Advisory Council concurs with Staff's recommendation that the SBI authorize the Executive Director, with assistance from the SBI's legal counsel, to negotiate and execute a commitment of up to $100 million, or 20% of Oak Hill Capital Partners V, whichever is less, plus an additional amount not to exceed one percent of the total commitment for the payment of required charges at closing. Approval of this potential commitment is not intended to be, and does not constitute in any way, a binding or legal agreement or impose any legal obligations on the State Board of Investment and neither the State of Minnesota, the Investment Advisory Council, the State Board of Investment nor its Executive Director have any liability for reliance by Oak Hill upon this approval. Until the Executive Director on behalf of the SBI executes a formal agreement, further due diligence and negotiations may result in the imposition of additional terms and conditions on Oak Hill or reduction or termination of the commitment.

6) **Investment with an existing distressed/opportunistic manager, Värde Partners ("Värde") in Värde Fund XIII ("Fund XIII").**

Värde is forming Fund XIII to invest in credit and value-oriented opportunities across a broad range of markets, including corporate and traded credit, specialty finance, real estate, and real assets and infrastructure. Värde seeks investments that offer attractive risk-adjusted returns. Depending on the opportunity set, the Firm has the capability to pursue opportunities across geographies, the liquidity spectrum and across a broad range of assets.

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

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

RECOMMENDATION:

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

7) **Investment with a new private equity manager, Arsenal Capital Partners ("Arsenal") in Arsenal Capital Partners V ("Fund V").**

Arsenal is forming Fund V to make private equity investments in the lower end of the U.S. middle market. Arsenal specializes in the Specialty Industrials and Healthcare sectors due to their attractive growth trends, large number of technology and innovation-rich companies, and opportunities to create value-added solutions. Arsenal seeks businesses that have potential for further value creation and where Arsenal can execute its "Strategic Company Building" strategy that focuses on expanding a company's solution offering of products and/or services, elevating its market position, addressing its limitations and risks, and compounding its growth.

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

More information on Fund V is included as **Attachment G beginning on page 35**.

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

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ATTACHMENT A

REAL ESTATE MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Rockpoint Real Estate Fund VI, L.P.
Type of Fund:	Real Estate Limited Partnership
Target Fund Size:	$3.0-$3.5 billion
Fund Manager:	Rockpoint Group, L.L.C.
Manager Contact:	Hank Midgley 500 Boylston Street, 21st Floor Boston, MA 02116

II. Organization and Staff

Rockpoint Group, L.L.C. ("Rockpoint" or the "Firm") is forming Rockpoint Real Estate Fund VI, L.P. ("Fund VI" or the "Fund") to acquire high-quality properties located in gateway coastal markets that provide opportunities to increase value through aggressive asset management, revenue enhancement, and expense reduction. Fund VI will continue to employ the fundamental value investment approach that the Rockpoint team has refined across multiple opportunistic funds and investment cycles over the last two decades. Rockpoint expects that Fund VI will focus primarily on office, multifamily, and hospitality investments, which are asset classes in which Rockpoint has long-standing experience.

Since its formation in 2003, Rockpoint has raised over $16 billion of equity capital across opportunistic, co-investment, core plus, and structured finance vehicles. The Firm is headquartered in Boston and has additional offices in Dallas and San Francisco. Rockpoint employs 65 professionals whose experience covers all major real estate asset classes and a broad range of geographic regions. The Firm is led by William Walton and Keith Gelb, Managing Members and co-founders of Rockpoint, who have been working and investing together for 24 years, and by additional Managing Members Paisley Boney, Thomas Gilbane, and Aric Shalev, who have been working and investing together as a group with Mr. Walton and Mr. Gelb for 14 years.

In March 2018, investment vehicles managed by Blackstone Strategic Capital Holdings Fund, a permanent capital vehicle managed by Blackstone Strategic Capital Advisors (part of the Blackstone Alternative Asset Management division of The Blackstone Group, L.P.) purchased a non-voting minority interest in each of the entities that beneficially owns and controls the General Partner and Manager. Blackstone has no involvement in the day-to-day operations or investment decisions of the General Partner and the Manager, but does have certain customary minority protection consent rights.

III. Investment Strategy

Rockpoint focuses on securing downside-protected assets and maximizing risk-adjusted returns by utilizing a fundamental value investment approach. This approach includes targeting assets with intrinsic long-term value, seeking to acquire investments at attractive prices relative to replacement costs and stabilized cash flows, and underwriting investments on an unleveraged basis and then customizing capital structures (based on the unique risk profiles of individual investments) to prudently enhance returns.

Rockpoint combines top-down macroeconomic research with rigorous bottom-up asset-specific diligence. Before an asset is acquired, Rockpoint completes a detailed and thorough asset- and market-level underwriting process which culminates in the Management Committee's approval of the investment. Rockpoint utilizes its capital markets expertise and strong lender relationships to minimize financing costs, negotiate favorable non-economic terms, and optimize the capital structure of each investment based on its unique risk-return profile. Once an asset is purchased, Rockpoint professionals begin executing their value-add plan through proactive asset management and strategic property management. Examples of increasing value include renovating the interior or exterior of a building, converting underutilized space into higher value retail space, upgrading the management team at a hotel property, and/or increase rents to market rates as leases roll.

Rockpoint's experienced investment professionals are responsible for all stages of an investment's asset management process, from underwriting and acquisition through business plan execution and ultimate liquidation. Rockpoint believes that this approach creates a competitive advantage through more rigorous acquisition underwriting, more seamless coordination in the design and implementation of value-enhancement strategies, greater control over business plan execution, and a comprehensive and informed understanding of current market dynamics within Rockpoint's target geographies.

In connection with its focused, intensive asset management approach, Rockpoint believes that customized and proactive property management offers the potential to drive cash flows and further enhance value at the asset level. To leverage and expand its capabilities, Rockpoint formed Rockhill Management, L.L.C. (together with its subsidiaries, "Rockhill"), in July 2015 to provide strategic property management and related services for certain investments owned by Rockpoint-sponsored funds. Rockpoint expects that the added control over business plan execution, gained via a dedicated strategic property management platform, will provide meaningful benefits to investors.

IV. *Investment Performance*

Previous fund performance as of September 30, 2018 is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Rockpoint I	2004	$904 million	$0	11.5%	1.2x	1.2x
Rockpoint II	2005	$1.7 billion	$0	(2.6%)	0.9x	0.8x
Rockpoint III	2007	$2.5 billion	$0	13.9%	1.4x	1.3x
Rockpoint IV	2011	$2.0 billion	$0	17.4%	1.3x	0.9x
Rockpoint V	2015	$2.6 billion	$100 million	13.8%	1.2x	0.1x
Rockpoint Growth & Income Fund I	2014	$739 million	$0	10.2%	1.3x	0.2x
Rockpoint Growth & Income Fund II	2016	$898 million	$0	27.5%	1.2x	0.0x

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

V. *Investment Period and Term*

The fund will have a four-year investment period from the later of (i) the initial closing or (ii) the predecessor fund's investment period termination date, and an eight-year term, with the possibility of up to two one-year extensions 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 Limited Partnership Fund Agreement.

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ATTACHMENT B

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Blackstone Capital Partners VIII L.P.
Type of Fund:	Private Equity
Target Fund Size:	> $20 billion
Fund Manager:	The Blackstone Group L.P.
Manager Contact:	Candice Sorbera 345 Park Avenue New York, NY 10154

II. Organization and Staff

The Blackstone Group L.P. (together with its affiliates "Blackstone" or the "Firm") is sponsoring Blackstone Capital Partners VIII L.P. ("BCP VIII" or the "Fund"), a private investment fund that will make control and control oriented private equity investments on a global basis. The Fund's focus will be on large scale and complex transactions, primarily in the United States and Western Europe, and on a more limited basis in other regions such as Asia.

Blackstone was founded in 1985 by Stephen A. Schwarzman and Peter G. Peterson and is headquartered in New York, NY. Blackstone's alternative asset management businesses include investment vehicles focused on private equity, real estate, hedge fund solutions, credit, secondary funds, tactical opportunities, infrastructure and insurance solutions. The Private Equity group at Blackstone includes 145 investment professionals, 76 of whom are in New York, 26 in London, 13 in Mumbai and 30 in Hong Kong, Sydney, Singapore and Tokyo combined. This includes 24 Senior Managing Directors with an average tenure at Blackstone of over 12 years.

All investment and disposition decisions of BCP VIII will be made by a global Investment Committee comprised of Joe Baratta, Prakash Melwani, Stephen A. Schwartzman, Jon Gray, Hamilton E. James, Neil Simpkins and select Senior Managing Directors.

III. Investment Strategy

As with its predecessor funds, Blackstone Capital Partners VIII will seek to pursue a value-oriented, thematic, and sector-based approach to private equity investing. The Firm's investment strategy is intended to be flexible and nimble, allowing BCP VIII to adapt to the best risk/reward opportunities across sectors and geographies at various points of the economic cycle.

Blackstone believes that several core strengths have allowed the Firm to differentiate itself and consistently execute its investment strategy over more than 30 years:

- A strong brand name and a reputation as a steward of businesses has made Blackstone a trustworthy and credible "partner of choice" for target companies which leads to attractive and proprietary deal flow.
- A global platform allows Blackstone to glean important market and macro insights from its global portfolio and its team of investment professionals with strong local knowledge and presence.
- Blackstone's large scale affords significant competitive advantages in sourcing, diligencing, governing and exiting investments. The Firm is able to engage bilaterally on large, complex multi-billion-dollar transactions because it has the ability to deliver large equity commitments quickly, confidentially and credibly.
- The Firm has a single globally integrated investment team and management structure. This simplified, centralized approach allows Blackstone to make decisions quickly, consistently and objectively, and ensures that core values and investment principles are instilled in all team members.
- A robust Portfolio Operations Group, led by former CEO of Nielsen and Vice Chairman of GE Dave Calhoun, is a key driver of investment performance. The team includes 36 functional experts focused on procurement, lean process, healthcare cost containment, data science, IT enablement, talent management, and sustainability.

In the current investment environment, Blackstone expects to focus its sourcing efforts on four key transaction types, which have comprised nearly 85% of the capital deployed from BCP VI and BCP VII:

- **Large Buyouts/Public-to-Privates/Corporate Carve-outs:** The Firm's brand, scale, and globally integrated platform position Blackstone as a partner of choice for public company boards, management teams, shareholders, and financial intermediaries. Moreover, Blackstone is able to hire and retain well-regarded CEOs, provide access to the Firm's network of portfolio companies, and significantly impact supplier and vendor relationships.
- **Buy and Build Platforms:** Blackstone's capital, operating resources and M&A expertise can serve as a catalyst for growth in platforms with differentiated business models and attractive long-term industry dynamics. The Firm is able to help professionalize these growing businesses by augmenting Finance, IT, HR and other functions, and improving capital allocation discipline.
- **Cyclical Dislocations in Energy:** Blackstone has successfully navigated several commodity price cycles, taking advantage of market dislocations and substantial ongoing capital supply/demand imbalances. Given the Firm's large existing portfolio in core production basins, the Fund is well positioned as a strategic buyer of assets.

- **Selective Control-Oriented Investments in Asia**: The Fund will seek to make 3-4 control oriented investments per year across India, Greater China, Australia and Japan. The strategy focuses on critical suppliers of goods and services to global customers, and seeks out businesses with clear, simple business models and financial statements. The Firm will avoid deeply cyclical or capital-intensive businesses.

IV. Investment Performance

Previous fund performance as of September 30, 2018 for Blackstone and the SBI's investments with previous funds, where applicable, is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI
BCP I	1987	$859 million	--	19%	1.9	1.9
BCP II	1993	$1.4 billion	$50 million	32%	2.1	2.1
BCP III	1997	$4.0 billion	--	14%	1.9	1.9
BCP IV	2002	$6.8 billion	$70 million	36%	2.5	2.4
BCP V	2006	$21.0 billion	$140 million	8%	1.7	1.6
BCP VI	2011	$15.2 billion	$100 million	15%	1.6	0.6
BCP VII	2016	$18.6 billion	$130 million	20%	1.2	0.1

* Previous Fund investments may be relatively immature and, therefore, returns may not be indicative of future results. Net Internal Rate of Return (IRR) and Multiple of Invested Capital (MOIC) provided by Blackstone for Funds I-VII. Distributed to Paid in Capital (DPI) represents the amount that has been paid out to investors and is calculated by dividing cumulative distributions by paid in capital.

V. Investment Period and Term

The term of the fund is eleven years, subject to two (one-year) extensions unless the Advisory Committee objects. The Investment Period will last for a period of six years from the commencement date of the Fund.

This document has been prepared by the Minnesota State Board of Investment (MSBI) and any views or opinions expressed herein are solely the views of MSBI and not Blackstone. Blackstone shall not be responsible for the contents of this document produced by MSBI. This document is a summary of more detailed information provided in the Confidential Private Placement Memorandum (the "PPM"). It is qualified in its entirety by the more detailed information provided in the PPM and any supplemental thereto.

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ATTACHMENT C

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Advent International GPE IX, L.P.
Type of Fund:	Private Equity
Target Fund Size:	$16 billion
Fund Manager:	Advent International Corporation
Manager Contact:	Andrew Harris 800 Boylston Street Boston, MA 02199

II. Organization and Staff

Advent International Corporation ("Advent") is one of the world's largest and most experienced global private equity firms, operating from 14 offices in 12 countries and employing 193 investment professionals. Since its inception in 1989, the Firm has raised more than $45 billion for its buyout funds from over 400 institutional investors worldwide. Through September 30, 2018, Advent's Global Private Equity Program ("GPE") has invested $33.2 billion in 255 companies, representing an aggregate enterprise value of approximately $90 billion. In addition to the GPE program, Advent is currently investing the sixth generation of its Latin American Private Equity Program ("LAPEF"), which focuses on control-oriented investments in later-stage companies throughout Latin America. Recent GPE funds have included 1-2 investments where GPE and LAPEF have invested alongside each other.

The GPE team comprises 154 investment professionals with a mix of operating, strategic consulting and financial backgrounds. Its 31 Investment Partners have an average of 18 years of experience in private equity and have worked with Advent for an average of 14 years. The Advent Portfolio Support Group is an in-house team of 21 professionals with operating and consulting experience who bring tools, expertise and resources to support the transformational initiatives that comprise the specific value creation plans at Advent's portfolio companies. Advent has also developed a global network of external Operating Partners, senior industry executives who work with the Firm on an independent consulting basis in specific sub-sectors.

III. Investment Strategy

As with its predecessor funds, GPE IX will pursue Advent's long-established strategy, which is based around four key components:

Sector specialization – Advent has developed a highly professionalized and systematic process which primarily focuses on companies in five core sectors in which Advent has substantial experience and deep local and international knowledge: (1) Business & Financial Services; (2) Healthcare; (3) Industrial; (4) Retail, Consumer & Leisure; and (5) Technology, Media & Telecom. Within these sectors, the GPE Team will use its deep expertise, combined with a resource-intensive approach, to proactively generate investment opportunities in sub-sectors that are undergoing substantial change, have outstanding growth potential or display other attractive characteristics. Within these sub-sectors, Advent will seek to utilize existing organizational knowledge and experience to identify investments in areas where it has had previous success and develop new opportunities based on a clear understanding of industry trends and competitive landscape.

Global presence and dynamic allocation of Capital – GPE IX intends to invest primarily in companies across the developed private equity markets of Europe and North America, and selectively on a global basis in markets such as Asia, where Advent has established local professionals and investment experience. Advent dynamically allocates capital as a result of a comprehensive "top-down" and "bottom-up" approach which results in finding and selecting the most compelling opportunities across sector and geography. Portfolio composition therefore varies from fund to fund depending on both secular and cyclical factors which impact the Firm's view of risk and return, and therefore the investment decisions.

Control-oriented investments in well-positioned companies – The Fund will seek to invest in companies where Advent has identified a clear path to attractive returns through a defined value creation plan, usually through a controlling stake or a structure allowing the Firm to influence the business in a significant way. Advent regards control as fundamental to exercising proper influence on portfolio companies and believes that working actively with management teams provides better downside protection.

Operationally intensive investing – Advent's focus on operational improvements, rather than financial engineering to drive earnings growth and create value positions the Firm well to find and develop compelling investment opportunities regardless of prevailing market conditions. Targeted companies will be well-positioned within their industry, but will also offer "break-out" return potential through tangible operational or strategic levers that, if properly executed, can deliver upside.

Advent expects that GPE IX will make approximately 30-35 investments over the course of its investment period, investing between $100 million and $1 billion or more of equity in each portfolio company. The enterprise value of investments made by the Fund is generally expected to be between $200 million and $5 billion.

IV. Investment Performance

Previous fund performance as of September 30, 2018 for Advent and the SBI's investments with previous funds, where applicable, is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Commitment	Net IRR*	Net MOIC*	Net DPI*
ESSF(GPE I)	1989	$173 million	--	16.9%	2.2	2.2
GPE II	1993	$324 million	--	22.0%	2.0	2.0
GPE III	1997	$1 billion	--	10.7%	1.7	1.7
GPE IV	2001	$1.5 billion	--	43.9%	3.0	3.0
GPE V	2005	€2.5 billion	--	46.1%	2.4	2.4
GPE VI	2008	€6.6 billion	$50 million	17.3%	2.1	2.1
GPE VII	2012	€8.5 billion	$90 million	19.1%	1.9	0.8
GPE VIII	2016	$13.0 billion	$100 million	7.9%	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) provided by Advent for Funds I-VIII. Distributed to Paid in Capital (DPI) represents the amount that has been paid out to investors and is calculated by dividing cumulative distributions by paid in capital.

V. Investment Period and Term

The term of the fund is ten years, subject to two (one-year) extensions with Advisory Committee approval. The Investment Period will last for a period of six years from the commencement date of 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 and any supplemental thereto.

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ATTACHMENT D

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. *Background Data*

Name of Fund:	Summit Partners GE X, L.P.
Type of Fund:	Private Equity – Buyout
Target Fund Size:	$4.0 billion
Fund Manager:	Summit Partners, L.P.
Manager Contact:	Andrew Symons 222 Berkeley Street 18th Floor Boston, MA 02116

II. *Organization and Staff*

Summit Partners, L.P. (together with its affiliates, "Summit" or the "Firm") is forming Summit Partners Growth Equity Fund X, L.P. (the "Fund" or "GE IX") to invest primarily in U.S. growth equity opportunities. Since inception, Summit's principal strategy has been to invest in privately held companies with a proven business model, a record of revenue and earnings growth, and a leadership team capable of sustaining that growth.

Founded in 1984, Summit has managed or is managing twenty-three limited partnership funds across the equity and fixed income spectrum. Fifteen funds with a combined committed capital of approximately $17.4 billion have been dedicated to growth equity and venture capital, and eight funds with a combined committed capital of approximately $4.5 billion have been dedicated to subordinated debt and credit. Summit is headquartered in Boston, MA with additional offices in Menlo Park, California, London, England and Luxembourg.

Summit's global investment team consists of more than 100 professionals, including 26 Managing Directors. The U.S. growth equity team consists of 10 Managing Directors and average 17 years of experience at Summit. They are supported by a team of 24 Principals, Vice Presidents, and Associates.

III. *Investment Strategy*

Summit's principal growth equity investment objective is to achieve significant long-term capital appreciation with controlled risk by seeking to invest in category-leading growth companies. The Firm's investment capital is typically used to support strategic growth initiatives, to fund acquisition strategies and to provide liquidity for existing owners. The Summit growth equity team seeks to identify and partner with companies within three primary sectors: technology, healthcare and life sciences, and growth products and services, which includes business services, financial services, consumer, industrial technology, and other growth industries. In pursuing its objectives, Summit applies strict investment criteria, a disciplined investment process, an active approach to portfolio management, and an emphasis on controlling risk and realization of liquidity for each of its growth equity investments.

At the time of Summit's investment, targeted companies are typically profitable, founder-led, and growing at a rate significantly in excess of their industry peers. Summit believes that entrepreneurs who achieve and maintain profitability have demonstrated a unique discipline to manage growth despite limited resources. Summit's approach mitigates downside risk by investing in senior or preferred equity and equity-related securities.

Over the course of more than three decades, Summit has developed and refined its growth equity investment model and approach to partnership in a way that has enabled the Firm to identify and invest with strong entrepreneurs and management teams as like-minded partners, and to add strategic value throughout the investment period. Summit believes it is both a pioneer and an innovator in direct deal sourcing and the use of proactive and thematic idea generation based on deep sector expertise. Since inception, nearly 75% of the Firm's U.S. growth equity investments have been sourced directly by a Summit investment professional (not through an investment bank, business broker or other intermediary). These directly sourced investments were identified proactively, whether as part of an industry ''deep dive,'' through the Firm's proprietary Alpha5 (''A5'') software platform, and/or through a referral from the Summit network, and then contacted by a Summit professional.

Summit complements its direct deal sourcing and idea generation capability with a platform of value enhancement services for its portfolio companies, including its Peak Performance Group, Capital Markets Team, and Talent and Recruiting Team. Summit believes its value enhancement platform is an invaluable resource to the Firm's investment professionals and its portfolio company executives. They are involved with Summit's portfolio companies throughout the investment life cycle, from pre-closing due diligence and deal structuring through exit. Each of the value enhancement teams is designed specifically to support the needs of growth companies, and each is differentiated by their provision of services to the Summit portfolio on an on-demand and cost-free basis. The Peak Performance Group focuses on engagements to improve operational efficiency, grow revenues, and strengthen infrastructure. The Capital Markets Team seeks to structure capital markets transactions that support growth initiatives. The Talent and Recruiting Team seeks to identify and recruits high-impact senior executives and board members.

IV. Investment Performance

Previous fund performance as of September 30, 2018 is shown below:

Fund	Vintage Year	Total Committed Capital	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Summit Ventures Fund I	1984	$160 million	$10 million	13%	2.0x	2.0
Summit Ventures Fund II	1988	$230 million	$30 million	30%	2.6x	2.6
Summit Ventures Fund III	1992	$280 million	--	63%	3.6x	3.6
Summit Ventures Fund IV	1995	$610 million	--	101%	7.6x	7.6
Summit Ventures Fund V	1998	$1,120 million	$25 million	8%	1.4x	1.4
Summit Ventures Fund VI	2001	$2,080 million	--	15%	2.2x	2.1
Summit Partners Private Equity Fund VII	2006	$3,100 million	--	11%	2.0x	1.5
Summit Partners Growth Equity Fund VIII	2012	$2,710 million	$100 million	25%	1.9x	1.2
Summit Partners Growth Equity Fund IX	2016	$3,300 million	$100 million	36%	1.2x	0.2

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

V. Investment Period and Term

The fund will have a six-year investment period and a ten-year term, with options to extend for two additional periods each consisting of two years, each with the consent of the General Partner and two-thirds in interest of the Limited Partners.

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

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ATTACHMENT E

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Oak Hill Capital Partners V
Type of Fund:	Private Equity – Buyout
Target Fund Size:	$3.0 billion
Fund Manager:	Oak Hill Capital Management, LLC
Manager Contact:	Andrew Burdick 263 Tresser Boulevard, 15th Floor Stamford, CT 06901

II. Organization and Staff

Oak Hill Capital Management, LLC ("Oak Hill" or the "Firm") is forming Oak Hill Capital Partners V ("OHCP V" or the "Fund") to continue it's more than 30 year history of private equity investing in North American middle market companies. The Firm began its investment activities in 1986 as the family office of Robert M. Bass, at which time it established its longstanding approach as "principal-minded" investors and its core philosophy of partnership through alignment of interests. In 1999, the Firm raised its first outside capital and formed its first fund. Oak Hill is led by two Managing Partners and ten Partners (together or separately, the "Partners"), who have worked at Oak Hill for an average of 17 years and have an average of 28 years of industry experience. The Oak Hill team comprises 35 dedicated professionals with extensive expertise in private equity, investment banking, capital markets, operations, consulting, legal, and other functional areas. Oak Hill is headquartered in New York, NY and has offices in Menlo Park, CA and Stamford, CT.

III. Investment Strategy

Fund V will continue the same theme-based investment strategy of Fund IV as it seeks to make equity investments of $100 million to $300 million in North American middle-market companies in the following sectors: (i) Consumer, Retail & Distribution; (ii) Industrials; (iii) Media & Communications; and (iv) Services. Investment themes are identified based on the attractiveness and sustainability of industry demand and financial trends, and are continually evaluated for whether or not they are actionable in light of macroeconomic and market conditions. The Firm invests considerable resources in analyzing the macroeconomic outlook, secular trends, and industry dynamics in addition to relevant company-specific trends.

Once an investment has been made, Oak Hill seeks to actively add value to its portfolio companies through a variety of resources that it offers to each company, in addition to providing board oversight. Management receives support and hands-on assistance from Oak Hill and the Firm's Senior Advisor operating network. Senior Advisors are former business executives who assist in driving value by providing strategic and/or operational expertise to portfolio company management. Deal teams are actively engaged in designing strategic plans, acquisitions, dispositions, capital markets events, and other priority items on portfolio companies' value creation roadmaps, each of which draws upon the industry experience and expertise of the Oak Hill team.

In order to unlock financial and strategic value over the course of an investment, Oak Hill typically focuses on one or two of the following initiatives, targeting those that are expected to have the largest impact on company performance.

- Operating Initiatives: Oak Hill has successfully executed a variety of revenue and profitability enhancing operating initiatives that directly result in revenue gains and/or EBITDA margin expansion such as capacity enhancement, geographic expansion, pricing model refinement, and margin improvement through supply-chain/sourcing arrangements.
- Strategic Repositioning: In some situations, Oak Hill will pursue major business transformations to maximize value and drive growth, such as enhancing brand positioning, go-to-market strategy, or implementing other business model refinements designed to increase franchise value.
- Mergers & Acquisitions: Oak Hill works closely with its management teams to pursue accretive add-on acquisitions. These acquisition opportunities are often pre-determined as a result of Oak Hill's theme-based approach and institutional sector knowledge.

Oak Hill believes that exit strategies and investment horizons must be tailored to meet the circumstances of each portfolio company as well as market conditions. The Oak Hill team has experience utilizing several different options to realize attractive returns on its investments, including: (i) selling portfolio companies to strategic buyers for stock, cash, or a combination thereof; (ii) IPOs and secondary public equity offerings; (iii) sales to financial buyers; and (iv) dividend recapitalizations. The Firm analyzes capital market opportunities and potential exit alternatives both during underwriting and throughout the life of each investment.

IV. Investment Performance

Previous fund performance as of September 30, 2018 is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
OHCP I	1999	$1,600 million	--	11.8%	1.9x	1.9
OHCP II	2004	$2,500 million	--	10.8%	1.7x	1.7
OHCP III	2007	$3,802 million	--	11.1%	1.8x	1.2
OHCP IV	2015	$2,654 million	$150 million	68.9%	1.4x	0.4

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

Notes to Performance Information

Past performance of Pre-OHCP, OHCP I, OHCP II, OHCP III, OHCP IV, or any other investments described herein are provided for representative purposes only and may not be indicative of future investment results. There can be no assurance that OHCP V will achieve comparable results, be able to implement its investment strategy, or be able to avoid losses.

V. Investment Period and Term

The fund will have a five-year investment period and a ten-year term, with options to extend for one year at the sole discretion of the General Partner and up to two additional one-year extensions with the approval of the Advisory Board.

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

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ATTACHMENT F

DISTRESSED/OPPORTUNISTIC MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Värde Fund XIII, L.P.
Type of Fund:	Private Equity Limited Partnership
Target Fund Size:	$2 billion
Fund Manager:	Värde Partners
Manager Contact:	Kim Steinberg 901 Marquette Avenue South Minneapolis, MN 55402 Phone: 952-374-6949

II. Organization and Staff

Värde Partners, Inc. is forming The Värde Fund XIII (Master), L.P. and certain parallel funds (collectively, the Fund) to invest in credit and value-oriented opportunities across a broad range of markets, including corporate and traded credit, specialty finance, real estate, and real assets and infrastructure.

Värde Partners is a global alternative investment firm with assets under management of over $13 billion. Värde was founded in 1993 and is headquartered in Minneapolis, Minnesota with regional headquarters in London (2004) and Singapore (2008). Värde also maintains additional offices in Asia Pacific, Europe and North America.

Värde is managed by a group of senior professionals, including fifteen partners: George Hicks, Marcia L. Page, Bradley P. Bauer, Ilfryn C. Carstairs, Jeremy D. Hedberg, Giuseppe Naglieri, Jonathan A. Fox, Ali M. Haroon, Scott T. Hartman, Andrew P. Lenk, David A. Marple, Francisco Milone, Timothy J. Mooney, Rick J. Noel and Brian C. Schmidt.

III. Investment Strategy

Värde's approach to the current investing opportunity draws from the experience the Firm has gained across global credit markets since its inception in 1993. Värde's roots are in distressed credit investing, and as such, the Firm believes that it has developed expertise in dealing with the complexity of credit cycles and in understanding the value of enterprises and assets that follow these cycles or are credit-dependent.

Värde's approach to investing is based on a set of core principles:

- Search opportunistically for complex situations in less efficient markets;
- Seek to invest at a price that allows Värde to unlock or create value;
- Focus on value drivers, the path to unlock value and potential exit strategies; and
- Manage risk through diversified investment programs and trading strategies.

Värde seeks investments that offer attractive risk-adjusted returns. Depending on the opportunity set, the Firm has the capability to pursue opportunities across geographies, the liquidity spectrum, and across a broad range of assets.

Värde's investing model depends on a significant investment in human capital and relies on in-house experts with respect to the geographies and industries/asset classes the Firm is pursuing. Värde builds a local presence in the regions where the Firm transacts and bolsters them with the Firm's large and experienced global team.

Värde will apply this investing approach to construct a portfolio pursued by four global investment teams: Corporate and Traded Credit, Specialty Finance, Real Estate, and Real Assets and Infrastructure.

Corporate and Traded Credit: The Corporate and Traded Credit team pursues investments in debt and equity instruments issued by corporate entities as well as government-issued debt. For the Fund, Värde expects that the team will focus on investments in:

- Companies Värde determines to be fundamentally sound but financially distressed (typically referred to as a "good company/bad balance sheet" strategy).

- Companies that Värde believes to be trading at an inappropriate discount to similar companies/securities and in companies for which Värde believes the liquidation value of the underlying assets to be greater than the market value of the related debt.

- Companies that are experiencing significant financial or business distress, including companies involved in bankruptcy or other reorganization and liquidation proceedings.

- Large-scale bankruptcies as well as restructurings of small-to-medium-sized enterprises.

- Opportunities where Värde believes certain expected events will ultimately remove pricing inefficiencies. These events generally include restructurings, refinancings, defaults, asset sales, and mergers and acquisitions.

- Capital structure arbitrage opportunities, which generally involve the purchase of a security that is perceived to be undervalued and the simultaneous short sale of a security that is perceived to be overvalued (typically within the same capital structure). In complement to the return potential from the arbitrage itself, the Firm believes that capital structure arbitrage trades are an effective way to build exposure in situations that often evolve into corporate distressed positions.

- Securities and obligations issued by sovereigns, quasi-sovereigns and financial institutions, which have occurred in these segments when traditional holders have reduced capacity for credit risk and become "forced sellers" as assets deteriorate in credit quality.

The Firm has experience playing an active role in bankruptcy, insolvency and restructuring processes, and may pursue and obtain majority or complete ownership of an entity in furtherance of certain opportunities that are otherwise consistent with the team's investment strategy.

Specialty Finance: The Specialty Finance team pursues investments in companies that originate small balance commercial and consumer credits, including credit cards, personal loans and equipment finance, as well as direct investments in those credits. Värde has a long history of investing in specialty finance assets and businesses across the globe. Värde's experience in the specialty finance sector is rooted in investing in consumer credit (e.g., credit cards) and commercial credit (e.g., small balance lending). As the lending environment and financial services industry have been reshaped in the wake of the global financial crisis of 2008, the Specialty Finance team has applied its experience underwriting and valuing specialty finance assets to make, manage and exit private equity investments in specialty finance businesses. The team has generated significant proprietary performance data from its long investment experience, which together with strong analytics and extensive in-house infrastructure, is integral to valuing portfolios and businesses for purchase. From time to time, the team may also rely on a network of asset managers (typically third-party service providers) to provide the resources necessary to originate new receivables, manage portfolios of performing receivables and work-out portfolios of stressed or non-performing receivables.

Värde expects that the opportunities identified for the Fund will primarily consist of private equity investments in specialty finance businesses, although some investment opportunities in the underlying credits may emerge as well.

Real Estate: The Real Estate team pursues investments in real estate assets and/or companies involved in developing, owning and/or managing property and/or originating certain real estate loans, investments that arise from lending to entities that develop and/or manage real property assets, and investments in loans and securities secured by certain real estate assets. Since its inception, Värde has been an active investor in the global real estate markets. Applying that experience, the team searches for market dislocations with identified catalysts for unlocking value. The team is path agnostic, which is to say the team is not reliant on any single acquisition channel to create real estate exposure. The team's flexible acquisition approach enables it to invest in real estate in a varied way and, as a result, Värde anticipates that it will be able to source and execute transactions that other market participants may not be capable of accessing or may overlook.

From time to time, the team may pursue concentrated thematic investments within a particular asset or sub-asset class, but in general, the team looks for value across the real estate universe.

Real Assets and Infrastructure: The Real Assets and Infrastructure team focuses on investments in real assets (other than real estate), including loans secured by assets associated with the energy and transportation sectors as well as investments in companies that operate in those sectors, and investments in companies that operate in the infrastructure sector. The team is currently focused on pursuing investments in transportation and energy. The Firm has invested in credit, assets and operating companies in this area since its inception.

As it relates to the transportation sector, Värde believes the long-lived and capital-intensive nature of these assets along with established and relatively robust secondary markets can make this an attractive area of investment at certain points in the cycle. Värde believes the inherent cyclicality across a number of sub-segments is driven by significant periods of capital misallocation that can lead to opportunities for the Firm to acquire, refurbish, operate and transition assets. The Firm has been an asset owner and lender, blending long-term strategic thinking with a short-term trading overlay to move in-and-out of positions based on the Firm’s view of industry fundamentals by sub-segment.

As it relates to the energy sector, the Firm has developed significant expertise in making selective investments throughout the energy value chain since the Firm’s inception. Värde has a dedicated research effort focused on the opportunity in the North American energy space, led from the Firm’s office in Houston. The Firm pursues energy investments globally and across the credit spectrum, including opportunistic trades in more liquid credit markets, illiquid loans and assets, special situations lending and active restructurings. More recently, activity in this area has focused on providing asset owners tailored financing solutions across the capital structure that are outside the traditional sources of bank capital and private equity investments and that provide attractive perceived risk/reward profiles.

IV. *Investment Performance*

Previous fund performance and the SBI's investment in those fund, where applicable, is listed in the table below. Performance is reported as of September 30, 2018

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Fund V	2000	$83 million		20.8%	2.8x	2.78x
Fund VI	2001	$47 million		17.8%	2.3x	2.29x
Fund VII, VII-A	2003	$147 million		2.7%	1.2x	1.17x
Fund V-B	2005	$89 million		5.3%	1.4x	1.40x
Fund VII-B, VIII	2006	$997 million		5.4%	1.4x	1.36x
Fund IX, IX-A	2008	$2.3 billion	$100 million	15.3%	2.2x	2.17x
Fund X	2010	$2.0 billion	$150 million	11.8%	1.9x	1.52x
Fund XI	2013	$1.9 billion	$200 million	8.2%	1.4x	0.35x
Fund XII	2016	$1.7 billion		11.4%	1.2x	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 Värde.

V. *Investment Period and Term*

The Fund will have a term of 10 years. The Investment Period will last for a period of three years from the final close, plus a six year harvest, subject to possible extensions.

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

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ATTACHMENT G

PRIVATE EQUITY MANAGER SUMMARY PROFILE

I. Background Data

Name of Fund:	Arsenal Capital Partners V LP
Type of Fund:	Private Equity – Buyout
Target Fund Size:	$1.75 billion
Fund Manager:	Arsenal Capital Partners
Manager Contact:	Patricia Grad 100 Park Avenue 31st Floor New York, NY 10017

II. Organization and Staff

Arsenal Capital Partners ("Arsenal" or the "Firm") is forming Arsenal Capital Partners V LP ("Fund V" or the "Fund") to make private equity investments in the lower end of the U.S. middle market. Since its founding in 2000, Arsenal has raised approximately $3 billion and has completed more than 150 transactions, including platform portfolio companies and follow-on acquisitions. The Firm is located in New York City and currently has 31 investment professionals and 28 senior advisors, all of whom are focused on one of the two sectors in which Arsenal specializes: Specialty Industrials and Healthcare. Arsenal is led by co-Managing Partners and co-Chief Investment Officers, Terry Mullen and Jeff Kovach. Arsenal's philosophy is to partner with talented management teams, provide them with access to world-class operating resources and patient capital, and develop positive, open, and constructive relationships that foster long-term value creation.

III. Investment Strategy

Arsenal specializes in the Specialty Industrials and Healthcare sectors due to their attractive growth trends, large number of technology and innovation-rich companies, and opportunities to create value-added solutions. Arsenal seeks businesses that have potential for further value creation and where Arsenal can execute its "Strategic Company Building" strategy that focuses on expanding a company's solution offering of products and/or services, elevating its market position, addressing its limitations and risks, and compounding its growth.

In Specialty Industrials, Arsenal is committed to building market-leading platforms that provide solutions engineered to meet the growing demand for improved functionality, efficiency, and performance of end products. Arsenal believes that innovation in chemistry and product engineering is integral not only to improving performance and value in product use, but also to improvements in health, safety, and sustainability. The growing demand for innovation across large end markets – including aerospace, building and construction, electronics, consumer products, food and beverage, and healthcare – provides significant opportunity to build solutions-oriented businesses that create value for customers, suppliers, employees, investors, and society. Within Specialty Industrials, Arsenal focuses on two specific segments: specialty chemicals and specialty materials. Examples of markets of focus are adhesives and sealants, coatings and additives, polymer additives and fine chemicals, and polyurethane systems and additives.

Within the Healthcare vertical, Arsenal is committed to improving the efficiency and efficacy of the healthcare industry and thereby patient outcomes. Arsenal believes that the combination of advances in biomedical science and information technology provides a unique opportunity to build important companies while making a significant improvement in the quality of care available to patients around the world. Central to Arsenal's mission is the creation of value for portfolio company clients, management teams and employees, investors, and society. The subsectors within Healthcare in which Arsenal currently focuses are business services to pharmaceutical companies and business services to hospitals. Most healthcare companies and institutions are seeking to optimize or restructure their organization or workflows to improve efficiency and better serve their markets and patients. Arsenal's technology-enabled business service companies serve as catalysts of these critical endeavors and strategically important operational partners.

Arsenal's approach to company building entails creating "multiple ways to win" by creating growth and value across market conditions. Investment professionals begin by focusing on companies within their respective verticals that are domain leaders that are dedicated to innovation. Once an investment is made, Arsenal looks to improve the business by helping with firm strategy, strengthening management teams, locating and integrating complementary add-ons, improving operations, and/or by managing complexity and risk. When the time comes to sell their stake, Arsenal typically has created a robust and durable business with high growth and cash flow, realized valuable synergies, and a world-class management team.

IV. Investment Performance

Previous fund performance as of September 30, 2018 is shown below:

Fund	Vintage Year	Total Commitments	SBI Investment	Net IRR*	Net MOIC*	Net DPI*
Arsenal Fund I	2002	$300 million	--	17.5%	1.7x	1.7x
Arsenal Fund II	2006	$500 million	--	11.4%	1.9x	1.6x
Arsenal Fund III	2012	$875 million	--	25.8%	2.3x	1.6x
Arsenal Fund IV	2016	$1,300 million	--	15.9%	1.2x	--

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

V. Investment Period and Term

The fund will have a five-year investment period and a twelve-year term, with two additional, one-year extension periods with the consent of the Advisory Board.

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

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TAB G

Investment Advisory Council Report

Public Markets, Non-Retirement and Participant Directed Investment Programs

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DATE: February 21, 2019

TO: Members, State Board of Investment

FROM: Members, Investment Advisory Council and SBI Staff

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

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

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

The report includes the following sections:

Page

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Review of SBI Public Markets Program
Fourth Quarter 2018

SBI Portfolio - Quarter and Year Attribution
In the fourth quarter, the SBI's overall portfolio, the Combined Funds, underperformed the composite benchmark return (-7.7% Combined Funds versus -7.3% Composite Benchmark). Domestic equities underperformed the Russell 3000 Index return (-14.8% Domestic Equity versus -14.3% Domestic Equity Benchmark), while international equities underperformed the MSCI ACWI ex USA Index (net) return (International Equity-11.8% versus -11.5% International Equity Benchmark). The core fixed income portfolio underperformed the Bloomberg Barclays U.S. Aggregate Index return (1.1% Fixed Income versus 1.6% Fixed Income Benchmark), and the Treasury portfolio, at a 3.6% return, slightly underperformed Bloomberg Barclays Treasury 5+ Year Index return of 3.7%. Lastly, private markets contributed positively to absolute performance, returning 3.7% for the quarter. With 58% of the portfolio market value, public equity (domestic and international) returned -9.5% for the quarter and contributed to the majority of the combined funds -7.7% return.

For the year ending December 31, public equities returned -8.4%, while private markets, with 15% of the portfolio, returned 15.6% percentage points and offset a portion of the declines in public equities. The Combined Funds returned -2.9% for the year. (Note: Private Markets are subject to a one quarter valuation timing lag.)

Domestic Equity
The large cap growth managers trailed the Russell 1000 Growth benchmark by 3.9 percentage points for the quarter. Stock selection in the Producer Durables and Health Care sectors led the underperformance. Winslow matched the benchmark, while Sands and Zevenbergen underperformed for the quarter.

The large cap value managers underperformed the Russell 1000 Value benchmark by 1.8 percentage points for the quarter. Overall stock selection was negative, led by the Energy and Financial Services sectors. All three managers trailed the quarterly benchmark.

The small cap growth managers matched the Russell 2000 Growth benchmark for the quarter. Sector allocation helped, while overall stock selection detracted from performance. ArrowMark outperformed for the quarter and the other three managers slightly underperformed.

The small cap value managers trailed the Russell 2000 Value benchmark by 0.5 percentage point for the quarter. Stock selection was slightly negative for the quarter, mainly in the Financial Services sector. Goldman outperformed for the quarter while the other three managers underperformed.

For the quarter, the semi-passive managers, in aggregate, underperformed the Russell 1000 index return by 0.3 percentage point. Stock selection overall contributed negatively, especially in the Financial Services and the Consumer Discretionary sectors. BlackRock underperformed the benchmark while J.P. Morgan matched the benchmark. The passive Russell 3000 and Russell 1000 index managers tracked their respective indices within expectation.

Developed International Equity
The active developed markets managers underperformed the MSCI World ex USA Standard Index (net) by 1.6 percentage points over the quarter. From a country perspective, stock selection in the United Kingdom and Australia was the largest contributor to the underperformance. Within the Index, Utilities was the top performing sector for the quarter, declining only -0.3%. The SBI's active developed program's underweight allocation to this defensively oriented sector contributed to the underperformance. Stock selection in both the Healthcare and Financials sectors also negatively impacted relative returns. AQR's semi-passive developed market portfolio underperformed the MSCI World ex USA Standard Index (net) during the quarter by 1.5 percentage points. Stock selection in the Materials, Energy, and Information Technology sectors as well as stock selection overall in Canada, France, and Japan also contributed negatively to the relative performance.

The passive developed markets manager tracked its index within expectation.

Emerging Markets Equity
Emerging markets equities (EME) declined relatively less than the U.S. and developed international equity markets, returning -7.5% for the quarter. While correlated with developed markets, EME experienced a market correction earlier in 2018 via Chinese Information Technology and EM currency, and generally declining prices at that time. In the fourth quarter, IT and trade oriented sectors continued to decline, but were offset by defensive utilities and a financial sector that tends to be local market oriented and less exposed to global capital markets. On a relative basis, the active program outperformed its benchmark returning -7.1% versus the MSCI EM benchmark of -7.5% for the quarter. Five managers in the active program outperformed while two managers underperformed. The overall emerging markets equity program, including passive, outperformed the benchmark by 0.3 percentage point for the quarter. Stock selection in Brazil and an underweight to China contributed to relative returns, but was partially offset by negative stock selection in Malaysia, specifically Hotels and Gaming. From a sector point of view, positive stock selection in Financials and Materials were the primary contributors to performance. The passive emerging markets manager tracked its index within expectation.

Fixed Income – Core
All four active SBI fixed income managers supporting the core fixed income pool underperformed the Bloomberg Barclays Aggregate benchmark this quarter. In total, the active managers returned 0.9% vs. 1.6% for the benchmark. The three semi-passive managers underperformed the benchmark by 0.2 percentage point. Yields fell (prices rose) across 2 year tenor and longer during the quarter as reaction to a global economic slowdown produced a flight to quality for fixed income assets. At the same time, yields on the short end of the curve increased in response to FOMC rate hikes. The combination of these two effects produced an inverted portion of the U.S. Treasury yield curve, with 2 year yields exceeding 3 and 5 year yields. Corporate bond spreads, as measured by USD IG OAS, widened from 99 bps to 147 bps during the quarter in correlation with equity risk assets. The short duration and/or underweight to U.S. Treasury positions detracted from relative performance for the SBI bond managers in the fourth quarter, while security selection in

ABS, CMBS, non-agency MBS contributed positively to performance. To add yield to the portfolio without increasing spread duration, managers gradually reduced Investment Grade Corporate exposure and added floating rate ABS, CMBS and other securitized assets, typically in the front end of the curve.

Fixed Income – Treasury Portfolio

For the fourth quarter, 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 3.6% versus 3.7% for the benchmark. On an absolute basis, longer dated U.S. Treasuries benefited from the "flight to quality" and the Treasury portfolio was the SBI's best absolute performer across public market asset classes. On a relative basis, slightly shorter duration positioning combined with spread widening of TIPS and longer dated U.S. Agency securities contributed to the underperformance.

Public Markets Managers' Organizational Update
Fourth Quarter 2018

Domestic Equity Managers

None

Developed International Equity Managers

Fidelity
In December 2018 Charlie Morrison, president of the Fidelity Asset Management division retired and was replaced by Steve Neff. Steve, most recently head of Technology and Global services at Fidelity, is a 22 year Fidelity veteran with a broad range of leadership experience.

Marathon
William MacLeod, portfolio manager, resigned from the firm in the fourth quarter of 2018. The responsibility of managing his 10% European allocation was split evenly between Charles Carter and Nick Longhurst. Charles and Nick have 20 and 14 years of experience at Marathon, respectively. Staff has no concerns at this time.

Acadian
On January 1, 2019 Brendan Bradley, previously Deputy CIO assumed the role of CIO replacing John Chisholm. John is now the co-CEO along with Ross Dowd replacing Churchill Franklin who is now the Chairman of Acadian. The announcement of these changes was made about a year ago. The SBI staff has no concerns with these changes.

McKinley
Shierley Widjaja, an employee of McKinley since 2010 and a portfolio manager since 2017, decided to leave the firm. Flora Kim, an 11 year employee with the firm and the current Director of Investments, will additionally assume Shierley's responsibilities. Also Gillian Sandler will be joining McKinley's Scientific Advisory Board. Ms. Sandler will provide additional expertise in the healthcare area. Staff has no concerns at this time.

State Street Global Advisors (SSgA)
Fourth quarter additions to SSgA's Global Equity Beta Team, which manages the State's passive accounts, included Yujing Cai (ESG), Jaroslaw Wiecek (Portfolio Management), Pankaj Kumar (Research), and Vidit Jain (Research).

Emerging Market Equity Managers

Morgan Stanley
Gaite Ali, an emerging markets team member for 11 years and the Brazil lead for the past three years, left the firm in December. She will be replaced by Paul Psaila and Eric Carlson, who will be fully responsible as co-leads for the Latin America and EMEA team in New York. Staff has no concerns with these changes at this time.

Fixed Income Managers

Dodge & Cox
Thomas Dugan, Senior Vice President, has been named Co-Director of Fixed Income. He will share leadership responsibility of Fixed Income with Dana Emery, President and CEO. Mr. Dugan will continue to serve on the U.S. and Global Fixed Income Investment Committees. Staff has no concerns at this time.

Charles Pohl, Chairman and CIO, is stepping down from the U.S. Fixed Income Investment Committee to focus on equity strategies at Dodge & Cox. Last year, Michael Kiedel and Nils Reuter were added to the Committee. Staff feels the top-down leadership structure of the firm remains adequately staffed.

2018 Manager Meetings

The fourth quarter manager reviews are noted below.

Investment Manager	Asset Class
• AQR Capital Management, LLC	International Equity
• BlackRock Institutional Trust Company, N.A.	Domestic Equity
• BlackRock Financial Management, Inc.	Fixed Income
• Dodge & Cox	Fixed Income
• Earnest Partners LLC	International Equity
• Galliard Capital Management, Inc.	Stable Value
• Goldman Sachs Asset Management	Domestic Equity
• Goldman Sachs Asset Management	Fixed Income
• Hotchkis and Wiley Capital Management, LLC	Domestic Equity
• J. P. Morgan Investment Management Inc.	Domestic Equity
• Macquarie Investment Management Advisers	International Equity
• Martin Currie Inc.	International Equity
• Neuberger Berman Investment Advisers LLC	Fixed Income
• Prudential Global Investment Management	Non-Retirement Fixed Income
• Pzena Investment Management, LLC	International Equity
• RBC Global Asset Management (U.S.) Inc.	Assigned Risk Fixed Income
• State Street Global Advisors (SSgA)	International Equity

Non-Retirement Manager Update
Fourth Quarter 2018

Fixed Income

RBC Global Asset Management
The fixed income portfolio return of 2.1% underperformed its benchmark, the Bloomberg Barclays Intermediate Government Index, by 10 basis points. Underweight positions in the Treasury sector combined with excess spread duration relative to the benchmark were the primary contributors to underperformance.

Prudential Fixed Income
The fixed income portfolio returned 1.4% for the quarter and underperformed its benchmark, the Bloomberg Barclays U.S. Aggregate, by 24 basis points. The portfolio's allocation to Investment Grade corporate, CMBS, ABS and Emerging Markets sectors detracted from returns, as spreads widened during the quarter. Security selection within these sectors was mixed, with CMBS, MBS/CMO selection contributing positively to performance, while selection in Investment Grade corporate and Emerging Markets detracted from returns.

Equity

BNY Mellon
Mellon tracked the benchmark for the quarter.

Deferred Compensation Manager Update
Fourth Quarter 2018

Domestic Equities

Vanguard Dividend Growth Fund

The Fund returned -9.0% for the quarter, which outperformed its benchmark, the NASDAQ US Dividend Achievers Select Index return of -11.0%. Positive relative return for the quarter was largely driven by stock selection in Real Estate and an underweight in Industrials and Energy sectors.

Vanguard Institutional Index Plus

The domestic equity portfolio tracked the return of the S&P 500 Index for the quarter with a -13.5% return.

Vanguard Mid-Cap Index

The mid-cap equity portfolio tracked the benchmark, CRSP US Mid Cap Index, for the quarter with a -15.5% return.

T. Rowe Price

The small cap equity portfolio outperformed the Russell 2000 for the quarter with a -16.1% return versus the benchmark return of -20.2%. Relative performance for the quarter benefited from stock selection in the Health Care and Consumer Discretionary sectors in addition to an underweight in the Energy sector. With the exception of Financials, all sectors had relative outperformance for the quarter.

International Equities

Fidelity Diversified International

The international equity portfolio reported a -14.2% return for the quarter, and underperformed the MSCI EAFE Free benchmark return of -12.5%. Stock selection in Consumer Staples, Industrials, and Communication Services detracted from returns for the quarter relative to the benchmark. Regionally, security selection in Europe and Japan detracted from relative returns, as did positioning in Asia Pacific ex Japan.

Vanguard Total International Stock Index

The portfolio outperformed the benchmark, the FTSE Global All Cap ex US Index, for the quarter with a -11.7% return versus the benchmark return of -11.8%. In the short term, the international portfolio will have higher tracking error because of fair value pricing, which tends to smooth out over time.

Fixed Income

Dodge & Cox Income Fund
The fixed income portfolio underperformed the benchmark, the Bloomberg Barclays Aggregate, for the quarter with a 0.3% return versus the benchmark return of 1.6%. The fund's shorter relative duration and overweight to corporate bonds and underweight to U.S. Treasuries detracted from relative returns. The portfolio maintains its defensive duration position, reflecting longer-term expectations for interest rates to rise more than is implied by current conditions.

Vanguard Total Bond Market Index
The fixed income portfolio matched the benchmark, the Bloomberg Barclays Aggregate Index, for the quarter with a 1.6% return. Small deviations in the fund's performance relative to the benchmark may occur given the fund's sampling approach to approximate the index.

Balanced and Conservative Options

Vanguard Balanced
The portfolio returned -8.1%, which slightly underperformed the customized benchmark return of -8.0% for the quarter. The benchmark is a combined return of 60% CRSP US Total Market and 40% Barclays Aggregate.

Galliard Capital Management
The stable value portfolio underperformed the benchmark, the 3-Year Constant Maturity Treasury plus 0.45%, for the quarter with a 0.6% return versus 0.8% for the benchmark. The portfolio allocation to spread sectors, including corporates, ABS, CMBS, and Taxable Municipals, detracted from returns during the quarter relative to the benchmark as U.S. Treasuries outperformed these securities. TIPS were also a detractor during the quarter as inflationary pressures remained muted.

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Report

AON Market Environment Report

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Market Environment

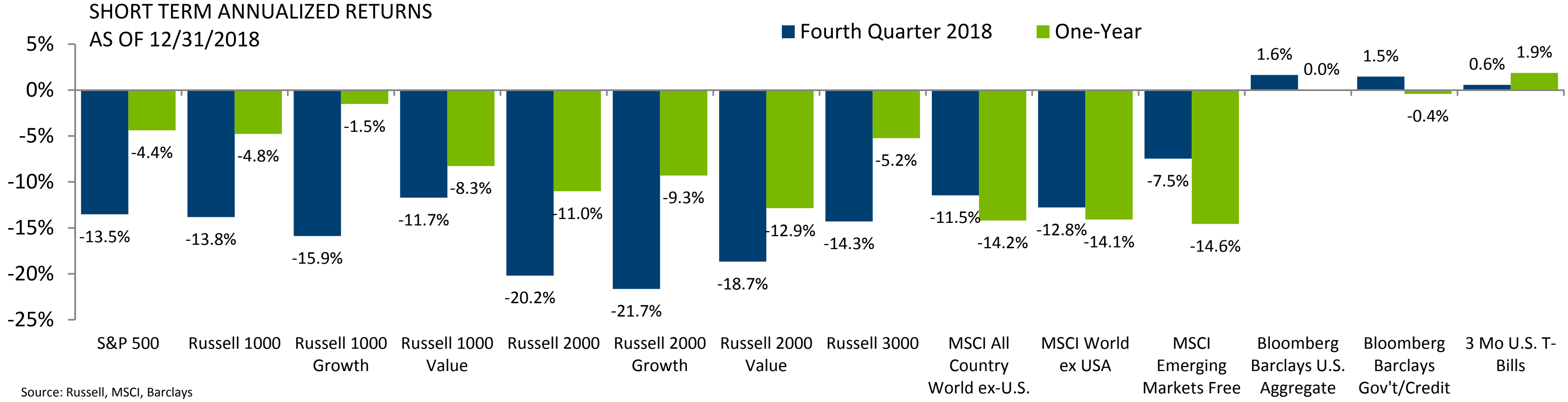
Fourth Quarter 2018

Aon

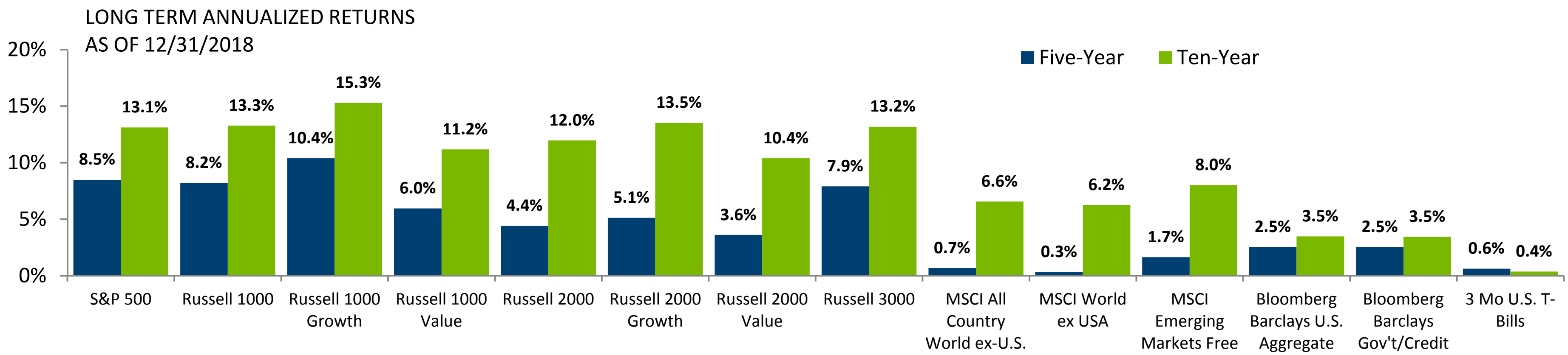
Investment advice and consulting services provided by Aon Hewitt Investment Consulting, Inc., an Aon Company.

Empower Results®

Market Highlights



Source: Russell, MSCI, Barclays



Source: Russell, MSCI, Barclays

Market Highlights

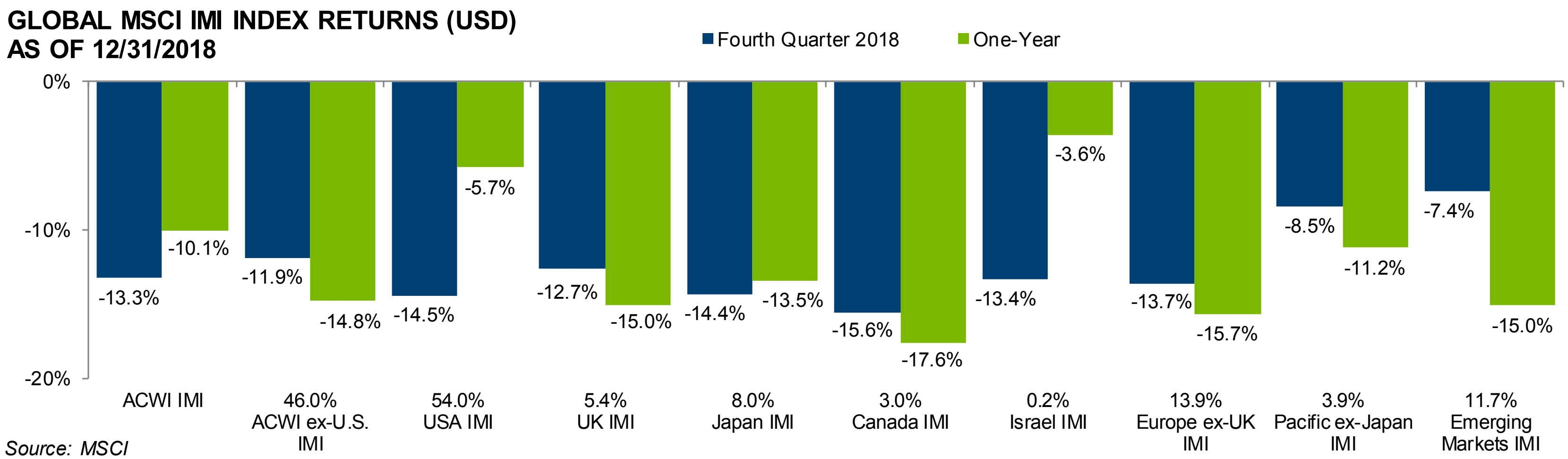
Returns of the Major Capital Markets

Periods Ending 12/31/2018

	Fourth Quarter	1-Year	3-Year[1]	5-Year[1]	10-Year[1]
Domestic Equity					
S&P 500	-13.5%	-4.4%	9.3%	8.5%	13.1%
Russell 1000	-13.8%	-4.8%	9.1%	8.2%	13.3%
Russell 1000 Growth	-15.9%	-1.5%	11.2%	10.4%	15.3%
Russell 1000 Value	-11.7%	-8.3%	7.0%	6.0%	11.2%
Russell 2000	-20.2%	-11.0%	7.4%	4.4%	12.0%
Russell 2000 Growth	-21.7%	-9.3%	7.2%	5.1%	13.5%
Russell 2000 Value	-18.7%	-12.9%	7.4%	3.6%	10.4%
Russell 3000	-14.3%	-5.2%	9.0%	7.9%	13.2%
International Equity					
MSCI All Country World ex-U.S.	-11.5%	-14.2%	4.5%	0.7%	6.6%
MSCI World ex USA	-12.8%	-14.1%	3.1%	0.3%	6.2%
MSCI Emerging Markets Free	-7.5%	-14.6%	9.3%	1.7%	8.0%
Fixed Income					
Bloomberg Barclays U.S. Aggregate	1.6%	0.0%	2.1%	2.5%	3.5%
Bloomberg Barclays Gov't/Credit	1.5%	-0.4%	2.2%	2.5%	3.5%
3 Mo U.S. T-Bills	0.6%	1.9%	1.0%	0.6%	0.4%
Inflation					
CPI-U	0.3%	2.0%	2.1%	1.5%	1.8%

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

Global Equity Markets

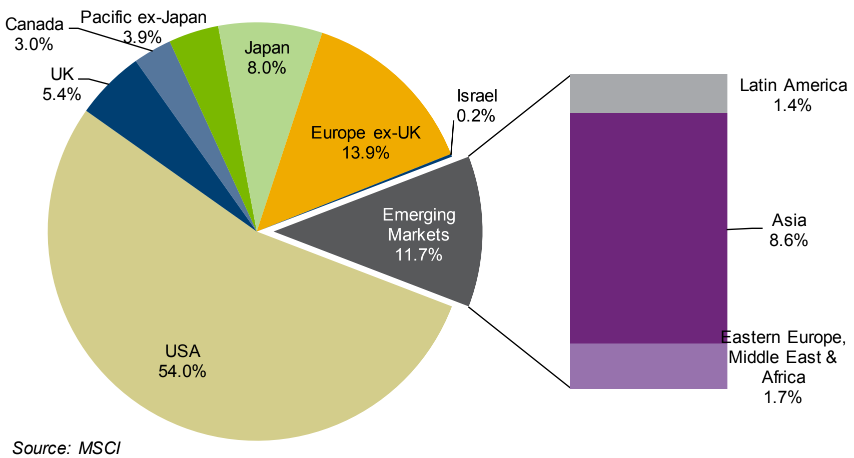


Source: MSCI

- Global equities were rocked by rising concerns of slowing global growth and trade wars in Q4 2018. Economic releases continued to underwhelm with measures of economic activity reflecting a slowing global growth environment. In local currency terms, the MSCI AC World Investable Market Index returned -13.1% while U.S. dollar strength led to a slightly lower return of -13.3% in U.S. dollar terms.
- Falling oil prices and poor performance from Canadian Financials, combined with a weakening of the Canadian dollar on the back of a more dovish stance from the Bank of Canada, resulted in the Canadian equity market being the weakest performer over the quarter.
- Emerging market equities outperformed relative to their developed market peers. This is despite the ongoing U.S.-China trade saga and building concerns over global growth. In Brazil, the election win for Jair Bolsonaro came as a surprise and was welcomed by markets due to his party's pro-market focus and reform agenda. From a sector perspective, financial stocks were the main outperformers with a comparatively small decline of -0.9% over the quarter.

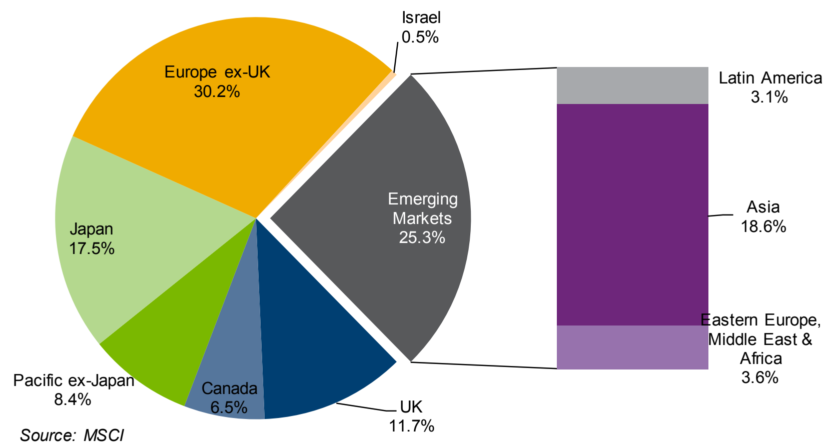
Global Equity Markets

MSCI ALL COUNTRY WORLD IMI INDEX
GEOGRAPHIC ALLOCATION AS OF 12/31/2018



Source: MSCI

MSCI ALL COUNTRY WORLD EX-U.S. IMI INDEX
GEOGRAPHIC ALLOCATION AS OF 12/31/2018

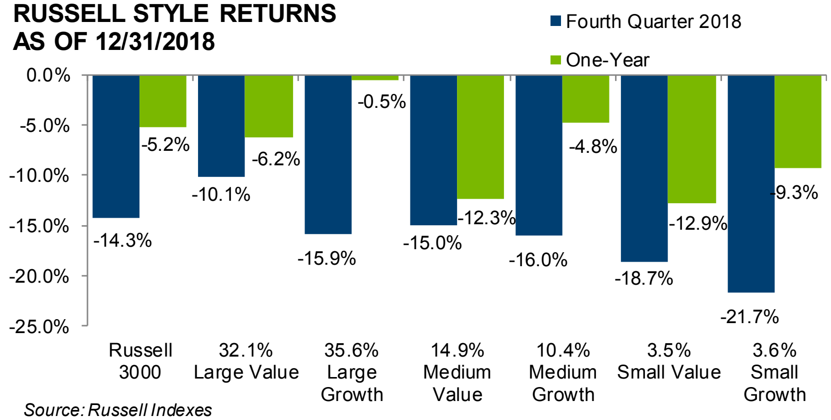


Source: MSCI

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

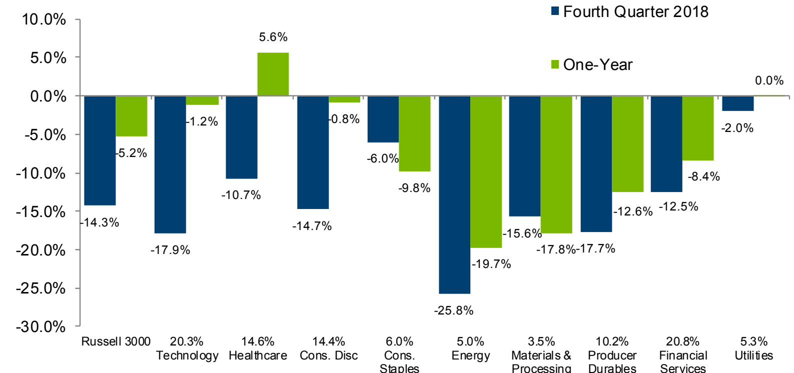
U.S. Equity Markets

RUSSELL STYLE RETURNS AS OF 12/31/2018



Source: Russell Indexes

RUSSELL GICS SECTOR RETURNS AS AT 12/31/2018

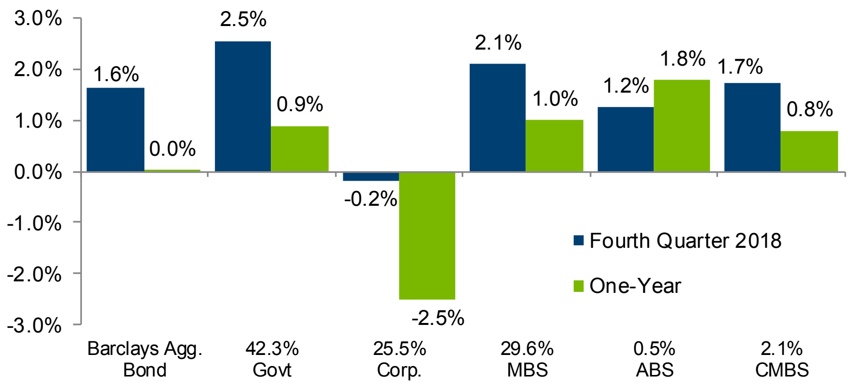


Source: Russell Indexes

- Up until November 2018, U.S. equities had generated high-single digit returns. However, all the gains were reversed towards the end of the quarter. The Dow Jones Total Stock Market Index dropped by 14.4% in the fourth quarter, translating into an overall 5.3% fall for the year. Most notably, Information Technology stocks, which had been such a strong driver for the U.S. market, moved sharply lower over the quarter. Earnings growth expectations, particularly in the tech sector where optimism was perhaps excessive, were revised down.
- The Russell 3000 Index fell 14.3% during the fourth quarter and 5.2% over the one-year period.
- All sectors generated negative returns over the quarter. In particular, Energy (-25.8%) and Technology (-17.9%) were the worst performing sectors in Q4 2018.
- Performance was negative across the market capitalization spectrum over the quarter. In general, small cap stocks underperformed both medium and large cap stocks over the quarter. Growth stocks underperformed their Value counterparts in Q4 2018. Over the last 12 months, Value stocks continued to lag their Growth stock equivalents significantly.

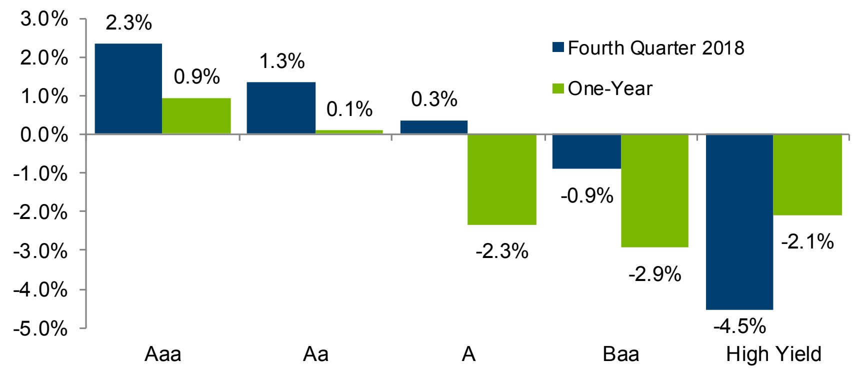
U.S. Fixed Income Markets

BLOOMBERG BARCLAYS AGGREGATE RETURNS BY SECTOR AS OF 12/31/2018



Source: FactSet

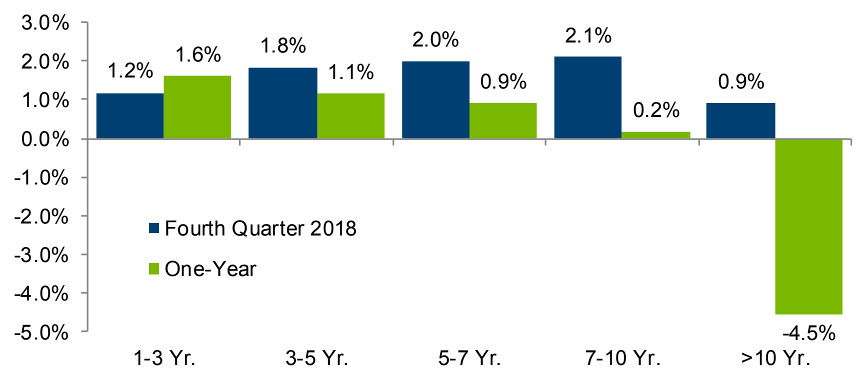
BLOOMBERG BARCLAYS AGGREGATE RETURNS BY QUALITY AND HIGH YIELD RETURNS AS OF 12/31/2018



Source: FactSet

- The Bloomberg Barclays U.S. Aggregate Bond Index rose over the quarter. Government bonds were the best performer at 2.5% whilst corporate bonds were the worst performer at -0.2%.
- Performance was positive across all investment-grade credit qualities, with the exception of Baa bonds which fell 0.9%. High yield bonds fell the most at -4.5%. In investment grade bonds, Aaa bonds was the major outperformer with a return of 2.3%.
- Intermediate maturity bonds outperformed short and long maturity bonds over the quarter. Intermediate maturity bonds returned 1.8-2.1% while short and long maturity bonds returned 1.2% and 0.9% respectively in Q4 2018.

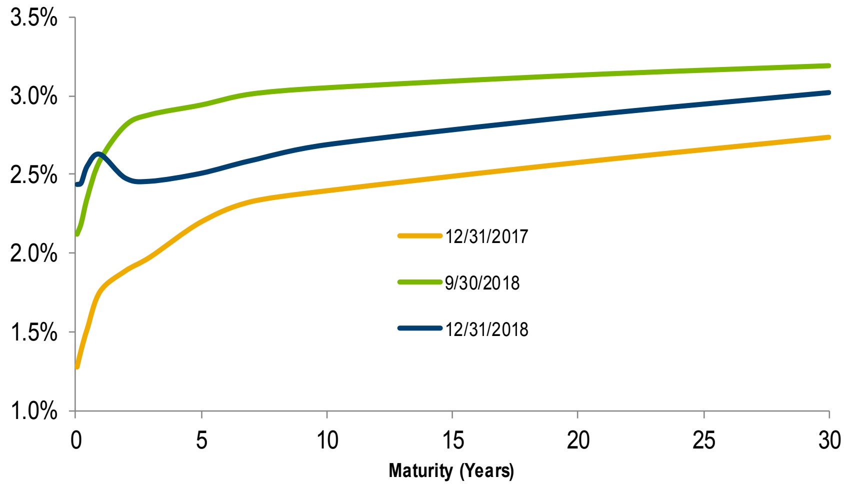
BLOOMBERG BARCLAYS AGGREGATE RETURNS BY MATURITY AS OF 12/31/2018



Source: FactSet

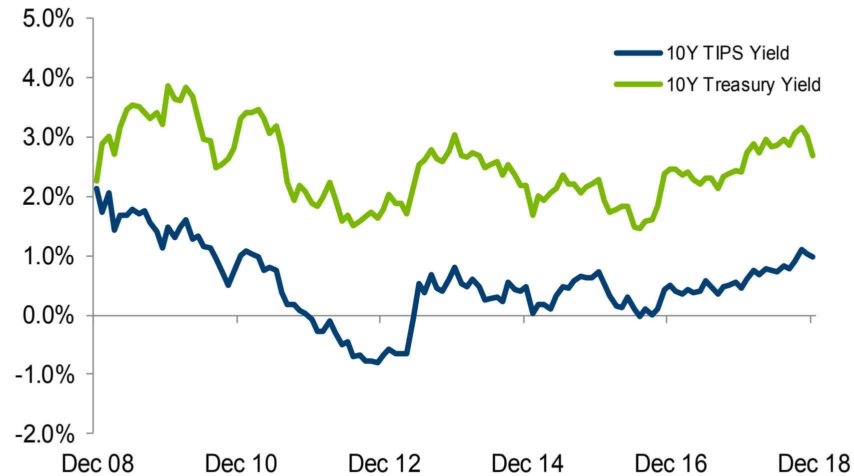
U.S. Fixed Income Markets

U.S. TREASURY YIELD CURVE



Source: U.S. Department of Treasury

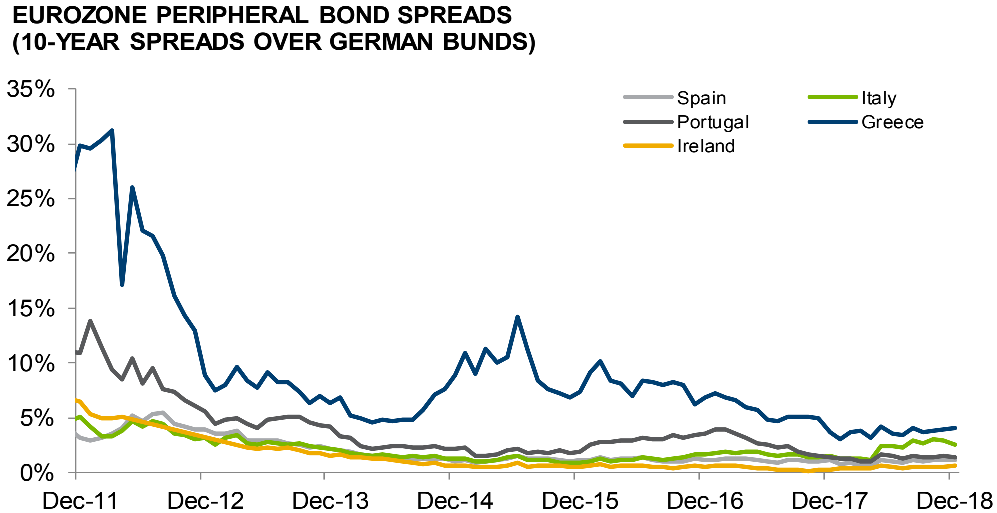
U.S. 10-YEAR TREASURY AND TIPS YIELDS



Source: U.S. Department of Treasury

- The U.S. nominal yield curve continued to flatten in the fourth quarter. Amidst rising short-end yields and falling long-end yields, the U.S. yield curve flattened the most since 2007 and the spread between the U.S. 2-year and 5-year treasury yields dropped below zero for the first time since 2007. The spread between the 2-year and 10-year yields also touched its lowest level since 2007. The spread between 10-year and 2-year yields ended the quarter at just 21bps.
- The 10-year U.S. Treasury yield ended the quarter at 2.69%, 36bps lower than at the start of the quarter in which the U.S. Federal Reserve (Fed) hiked its federal funds rate by 25bps to a range of 2.25-2.5%. While starting the quarter with a more hawkish stance and indicating that several more hikes would be needed in the future, the Fed later back-tracked with comments intimating U.S. rates are not far from reaching the Fed's neutral rate estimate.
- The 10-year TIPS yield rose by 7bps over the quarter and ended the period at 0.98%.

European Fixed Income Markets



Source: Factset

- Bond spreads over 10-year German bunds rose across the eurozone (except for Italy). The European Central Bank (ECB) kept its policy rate unchanged but ended their quantitative easing programme which has seen trillions of euros used to purchase European debt and cheapen financing in the bloc.
- Italian government bond yields fell by 43bps to 2.75% over the quarter as the Italian Government succumbed to the European Commission and lowered its budget target to 2.04% instead of the initially proposed 2.4%. At their peak, spreads between 10-year Italian and German bonds briefly reached their highest level since 2013 at 319bps.
- Portuguese sovereign bond yields fell by 16bps to 1.71% supported by Moodys' upgrade of the country's credit rating to investment grade.
- Greek government bond yields rose by 21bps to 4.35% as fears grew over the ability of the Greek banks to reduce their large portfolios of bad debt and tensions increased between the ruling Syriza party and their coalition partner, Independent Greeks (Anel), over a naming deal with neighboring Macedonia.

Credit Spreads

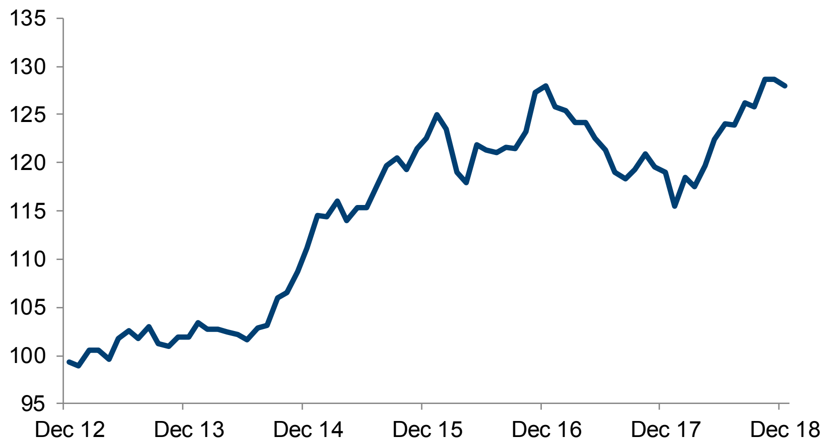
Spread (bps)	12/31/2018	9/30/2018	12/31/2018	Quarterly Change (bps)	1-Year Change (bps)
U.S. Aggregate	54	39	36	15	18
Gov't	1	0	1	1	0
Credit	143	100	89	43	54
Gov't/Credit	60	43	40	17	20
MBS	35	28	25	7	10
CMBS	86	60	62	26	24
ABS	53	38	36	15	17
Corporate	153	106	93	47	60
High Yield	526	316	343	210	183
Global Emerging Market	330	273	215	57	115

Source: Barclays Live

- During the fourth quarter, spreads over U.S. Treasuries generally widened across all maturities. Much of the move occurred in December as investors sought to switch to less-risky assets, such as U.S. treasuries, as fears over tightening financial conditions and ongoing global trade tensions took over.
- High Yield bond spreads widened the most over the quarter, widening by 210bps, followed by Global Emerging Markets bonds spreads which widened by 57bps. Unlike the 2015/6 high yield shakeout, spread widening was not dominated by poor returns from the energy sector but was more widespread.

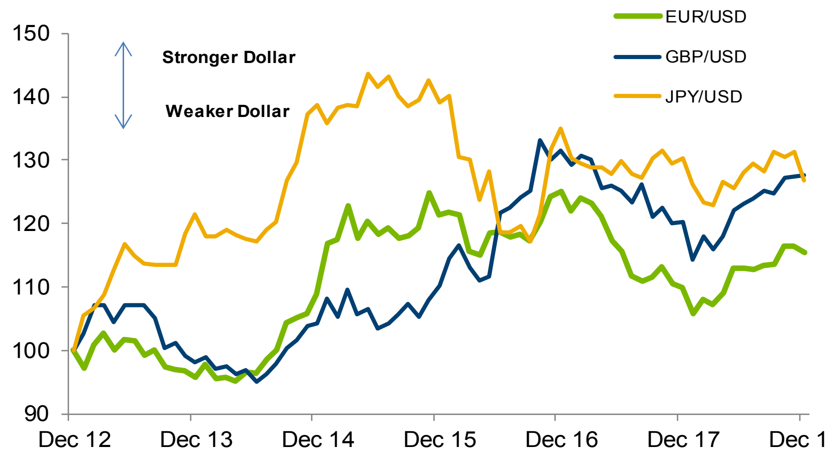
Currency

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



Source: Federal Reserve

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

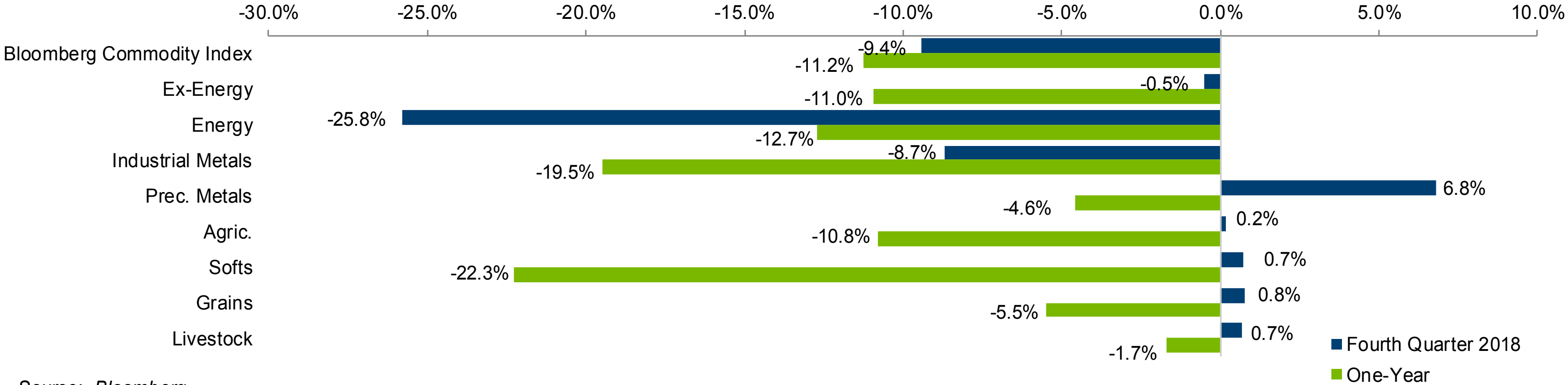


Source: Factset

- The U.S. dollar continued on an upward trend as it rose 1.8% on a trade-weighted basis over the quarter.
- Benefiting from the relative strength of the U.S. economy and tightening monetary policy, the U.S. dollar appreciated against most major currencies with the exception of the Japanese yen, which appreciated strongly across the board – benefiting from the risk-off environment.
- With time ticking precariously down to 29 March (the day in which the UK leaves the EU, subject to no extension or removal of Article 50) and no resolution in sight, sterling was generally weak.
- Both the Bank of England and Bank of Japan kept their monetary policy unchanged at their respective meetings during the quarter. In Europe, the ECB confirmed that it would end its quantitative easing program at its December meeting despite a weakening in European economic data.

Commodities

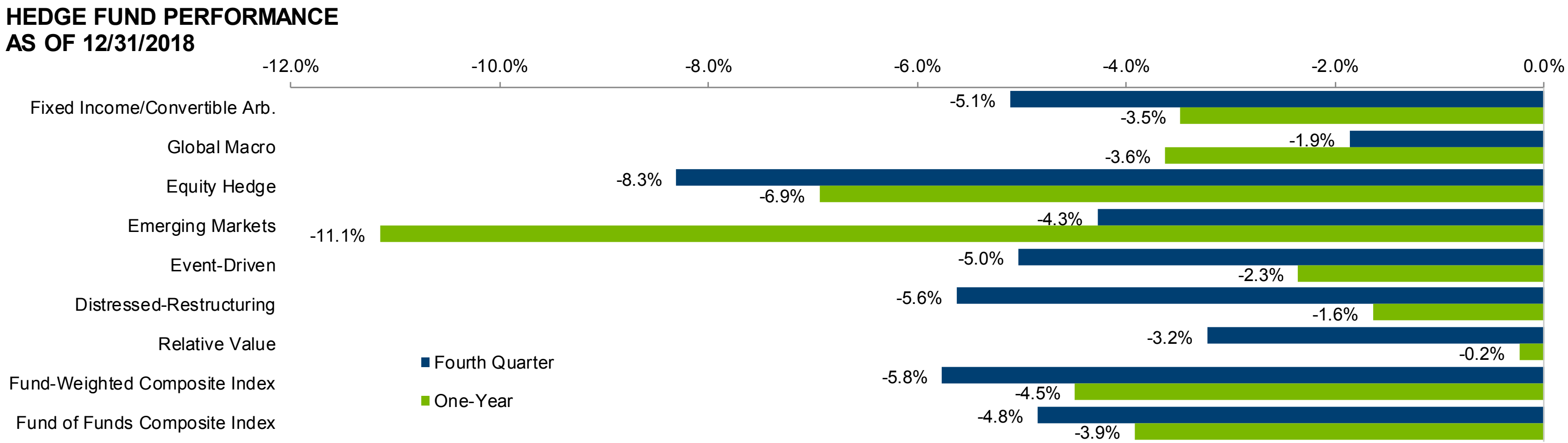
COMMODITY RETURNS
AS OF 12/31/2018



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

- Commodities fell significantly over the quarter with the Bloomberg Commodity Index returning -9.4%.
- Energy was the worst performing sector over the quarter with a return of -25.8% as crude oil prices fell sharply. The agreement to cut crude oil production by OPEC and Russia late in the quarter was not enough to stymie tumbling crude oil prices, brought lower by U.S. inventories rising faster than expected, a slowdown in the Chinese economy, the unexpected waiver on Iranian oil importer sanctions and of course the weaker outlook for global growth. The price of Brent crude oil fell by 35.0% to $54/bbl and the price of WTI crude oil fell by 38.0% to $45/bbl.
- Precious Metals was the best performing sector in Q4 2018 with a return of 6.8%. The price of gold increased 7.3% to $1,278.30$/ozt as investors moved towards ‘safe-haven’ assets.
- The Agriculture sector returned 0.2% over the quarter. Within the Agriculture sector, Softs and Grains returned 0.7% and 0.8% respectively.

Hedge Fund Markets Overview

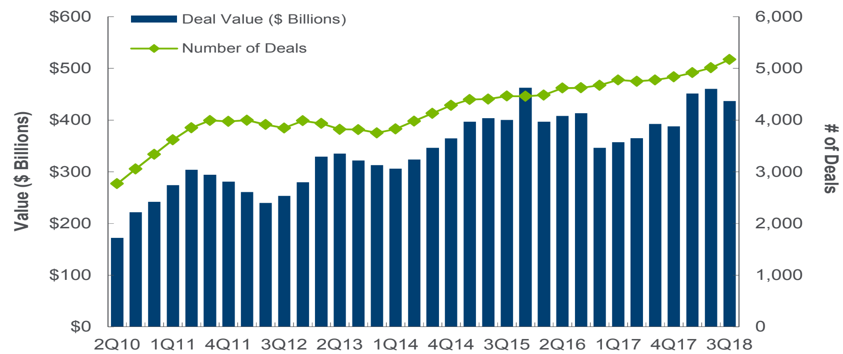


Note: Latest 5 months of HFR data are estimated by HFR and may change in the future.
Source: HFR

- Hedge fund performance was negative across all strategies in the fourth quarter. Over the quarter, Equity Hedge and Distressed-Restructuring were the worst performers with a return of -8.3% and -5.6% respectively whilst Global Macro and Relative Value were the best performers at -1.9% and -3.2% respectively.
- In October, Equity Hedge was the worst performer, led lower by poor Energy/Basic Materials Index and Technology Index returns. Relative Value strategies, in particular fixed-income-based funds, were able to benefit from the volatility and fell the least over the month.
- In November, Relative Value strategies continued to outperform led by Credit Multi-strategy and Volatility funds. However, Emerging Markets were the best performer led higher by Asian equities. Global Macro funds underperformed, driven lower by falling commodity prices.
- In December, Equity Hedge was again the worst performed as the strategies, with the notable exception of Market Neutral funds, followed global equity markets lower. Global Macro funds were the best performer, buoyed by strong performance from short equity and commodity positions within Systematic Diversified funds.

Private Equity Market Overview – Q3 2018

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

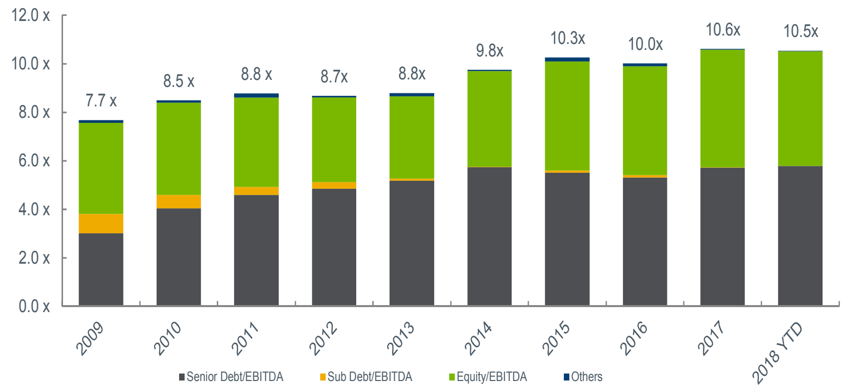
- **Fundraising:** In Q3 2018, $181.9 billion was raised by 299 funds, which was up 20.8% on a capital basis but down 22.9% by number of funds from the prior quarter.[1] This also marks a decline of 30.0% by number of funds but an increase of 2.3% by capital raised over Q3 2017. Dry powder stood at $1.84 trillion at the end of the quarter, up 14.3% and 35.3% compared to year-end 2017 and the five year average, respectively.[1]
- **Buyout:** Global private equity-backed buyout deals totaled $97.7 billion in Q3 2018, which was down 22.5% from the prior quarter but up 26.7% from the five year average.[1] At the end of Q3 2018, the average purchase price multiple for all U.S. LBOs was 10.5x EBITDA, down from 10.6x as of the end of 2017.[2] Large cap purchase price multiples stood at 10.5x, up compared to the full-year 2017 level of 10.4x.[2] The weighted average purchase price multiple across all European transaction sizes averaged 10.7x EBITDA in Q3 2018, equal to the 10.7x seen at year-end 2017. Purchase prices for transactions of €1.0 billion or more decreased from 11.7x at Q2 2018 to 11.3x in Q3 2018. Transactions between €500.0 million and €1.0 billion were flat from Q2 2018, and stood at 10.8x at the end of Q3 2018.[2] Globally, exit value totaled $90.5 billion during the quarter, significantly lower than the $111.8 billion in exits during Q2 2018. Q3's total was primarily driven by trade sales ($64.1 billion, up quarter-over-quarter) and through sales to GPs ($20.7 billion, down quarter-over-quarter).
- **Venture:** During the third quarter, 1,325 venture backed transactions totaling $28.0 billion were completed, which was an increase on a capital basis over the prior quarter's total of $24.0 billion across 1,564 deals. This was 62.4% higher than the five-year quarterly average of $17.2 billion, but 9.4% lower than the five-year quarterly average by number of deals.[3] Total U.S. venture backed exit activity totaled approximately $20.9 billion across 182 completed transactions in Q3 2018, down from $31.8 billion across 225 exits in Q2 2018.[3]
- **Mezzanine:** Ten funds closed on $1.4 billion during the quarter, significantly down from Q2 2018's total of $15.3 billion raised by eight funds and the five year quarterly average of $5.4 billion.[1] Estimated dry powder was $58.0 billion at the end of Q3 2018, up by $7.0 billion from Q4 2017 and higher than the $53.1 billion high seen at year-end 2016.[1] Fundraising remains robust with an estimated 76 funds in market targeting $21.3 billion of commitments.[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.

Private Equity Market Overview – Q3 2018

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



Source: S&P

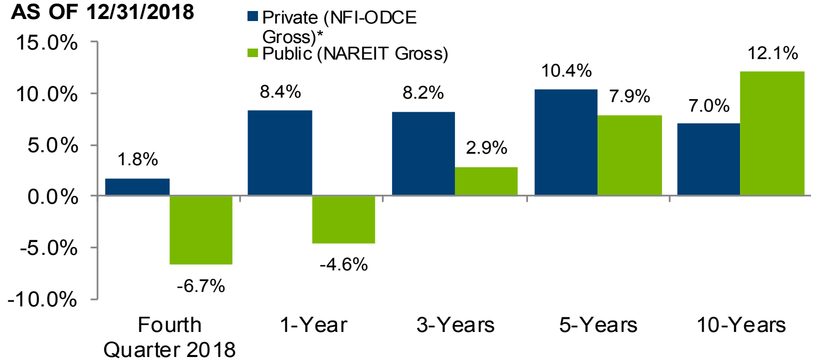
- **Distressed Debt:** The LTM U.S. high-yield default rate was 2.02% as of September 2018, which was up from December 2017's LTM rate of 1.27%.[4] During the quarter, $6.8 billion was raised by 13 funds, significantly lower than the $18.5 billion raised during Q2 2018. This was the lowest amount raised since Q3 2016.[1] Dry powder was estimated at $119.5 billion at the end Q3 2018, which was up 14.5% from Q4 2017. This remained above the five-year annual average level of $97.2 billion.[1]
- **Secondaries:** Seven funds raised $4.0 billion during the third quarter, up from $3.1 billion raised by twelve funds in Q2 2018, but lower than the $13.4 billion raised in Q3 2017.[1] At the end of Q3 2018, there were an estimated 46 secondary and direct secondary funds in market, targeting approximately $56.8 billion.[1] Dry powder stood at $64.0 billion through 1H 2018, down from Q4 2017's total of $77.0 billion.[5]
- **Infrastructure:** $46.6 billion of capital was raised by 26 funds in Q3 2018 compared to $18.9 billion of capital raised by 17 partnerships in Q2 2018. At the end of the quarter, dry powder stood at an estimated $173.3 billion, up from the prior quarter's total of $161.0 billion. Infrastructure managers completed 506 deals with an estimated aggregate deal value of $238.7 billion in Q3 2018 compared to 663 deals totaling $238.2 billion a quarter ago.[1]
- **Natural Resources:** During Q3 2018, seven funds closed on $6.4 billion compared to seven funds having raised $2.7 billion in Q2 2018. Energy & utilities industry managers completed approximately 104 deals totaling an estimated $30.2 billion through Q3 2018. Dry powder is estimated at $59.3 billion for Q3 2018, down 5.7% from Q2 2018's level.[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.

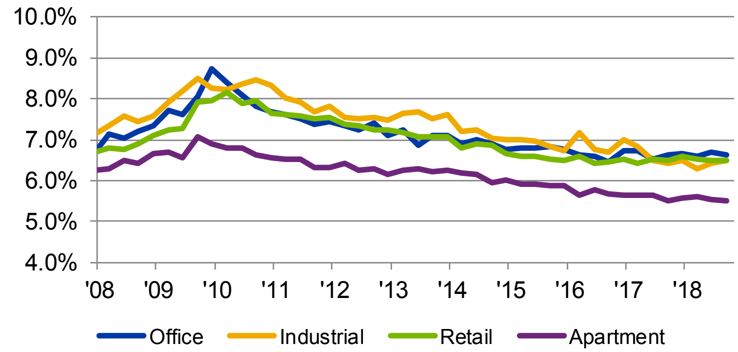
U.S. Commercial Real Estate Markets

PRIVATE VS. PUBLIC REAL ESTATE RETURNS AS OF 12/31/2018



**Second quarter returns are preliminary*
Sources: NCREIF, Factset

CAP RATES BY SECTOR



Sources: RCA, Aon

- U.S. Core real estate returned 1.76%* over the fourth quarter, equating to 8.4% total gross return year-over-year, including a 4.2% income return. Net income growth is expected to be the larger driver of the total return on a go forward basis given the current point of the real estate cycle.
- Global property markets, as measured by the FTSE EPRA/NAREIT Global Developed Real Estate Index, fell 5.5% (USD) in aggregate during the fourth quarter, declining 4.7% for the full year. Sector weakness was largely attributed to a broader equity market decline in Q4 (MSCI World Index down 13.3%) due to a host of macro concerns which resulted in a broad-based sell-off which also negatively impacted listed real estate share prices. Asia/Pacific was the top performing region with a slight loss of 0.3%, followed by North America declining 5.9% and Europe which fell 10.0%. The U.S. REIT markets (FTSE NAREIT Equity REITs Index) declined 6.7% in the fourth quarter, falling 4.6% for 2018. The sector declined 8.2% in December alone, which was generally on par with the broader US equity market (S&P 500 lost 9.0%). While the 10-year U.S. Treasury bond yield fell to 2.7% after starting the quarter above 3.0%, the movement was unable to support REIT share prices. As of quarter end, the U.S. REIT dividend yield stood of 4.6%.
- According to RCA, through August 2018 the U.S. property market has experienced price growth of 7.7% year-over-year across major sectors. Further, transaction volume was up 46% over the same period.
- Return expectations have normalized, with go forward expectations in line with historical norms. Rising interest rates have led to asset value correction fears across various asset classes. However, according to Preqin, there remains a record amount of dry powder ($295 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.
- Aon prefers investments that offer relatively strong rental income growth, or value-add potential with near-term income generation prospects. It is critical to identify sub-sector and sub-market driven themes in the current environment; unlike the last 6-7 year period, as assets are no longer trading at deep discounts to replacement value. Real estate investments should seek levers of NOI growth that are not predicated on continued market uplift. For example, an investment thesis can focus towards sectors benefiting from secular changes (e.g. Industrial and e-commerce), acquiring in-place rents below current market terms, and improving operational efficiency.

*Indicates preliminary NFI-ODCE data gross of fees

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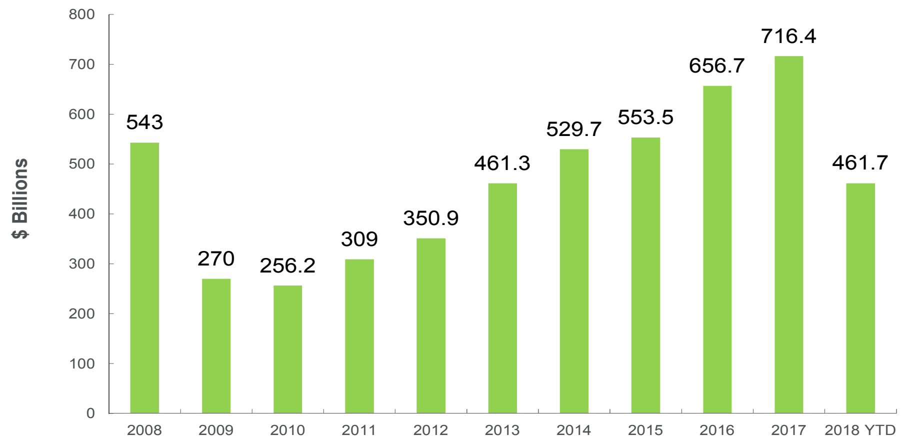
Appendix A:

Global Private Equity Market Overview
3Q 2018

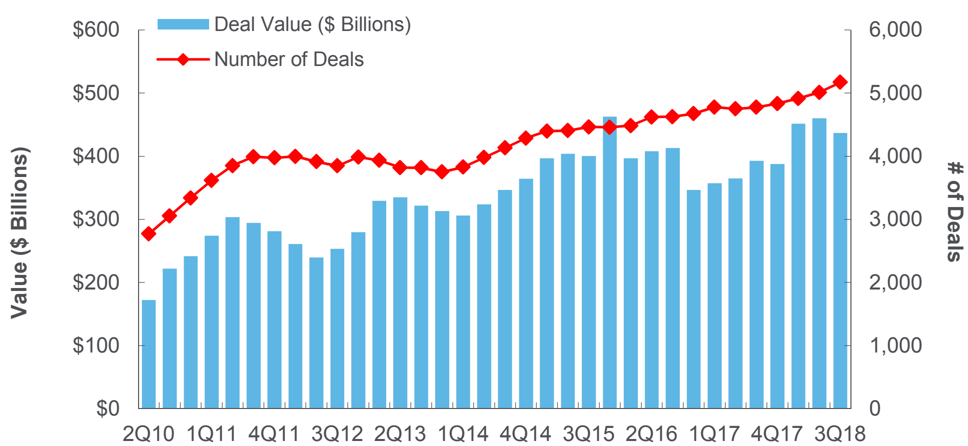
Private Equity Overview

Total Funds Raised



Source: Preqin

LTM Global Private Equity-Backed Buyout Deal Volume



Source: Preqin

Fundraising

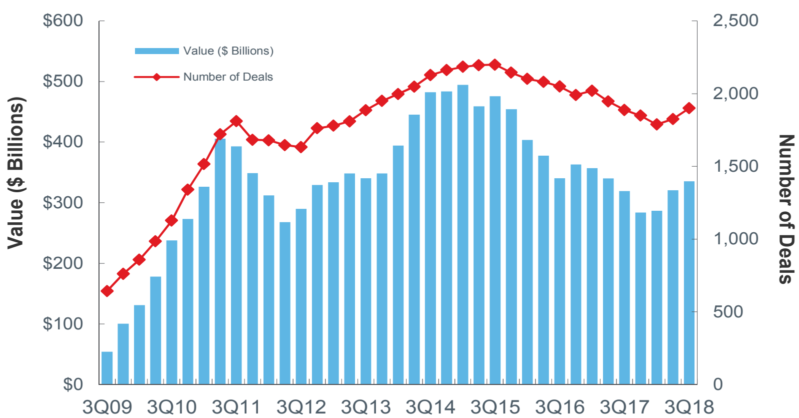
- In 3Q 2018, $181.9 billion was raised by 299 funds, which was up 20.8% on a capital basis but down 22.9% by number of funds from the prior quarter.[1] This also marks a decline of 30.0% by number of funds but an increase of 2.3% by capital raised over Q3 2017.
  - About two-thirds of 3Q 2018 capital was raised by funds with target geographies in North America, comprising 67.8% of the quarterly total. Capital targeted for Asia made up 20.7% of the total funds raised during the quarter, while the remainder was attributable to managers targeting Europe and other parts of the world.[1]
- Dry powder stood at $1.84 trillion at the end of the quarter, up 14.3% and 35.3% compared to year-end 2017 and the five year average, respectively.[1]

Activity

- On an LTM basis, 5,170 deals were completed for an aggregate deal value of $437.0 billion as of 3Q 2018 compared to 4,775 transactions totaling $392.7 billion as of 3Q 2017.[1]
  - Average deal size was $86.2 million on an LTM basis, down 6.8% and 1.3% from the prior quarter and the five-year quarterly average level, respectively.
- European LBO transaction volume totaled €31.7 billion through 3Q 2018 and €96.4 billion on an LTM basis, compared to 3Q 2017's quarterly and 2017 full year totals of €22.2 billion and €78.6 billion, respectively. 3Q 2018's total was up 101.1% from the five-year quarterly average.[3]
- At the end of 3Q 2018, the average purchase price multiple for all U.S. LBOs was 10.5x EBITDA, up from 9.8x as of the end of 2Q 2018. This uptick is in line with the yearly growth trend for purchase price multiples in the U.S., as the 1Q 2018 average stood at 10.3x (while the 2Q 2018 average was 9.8x EBITDA).[3]
  - This was 0.6x higher than the five-year YE average and 1.3x turns (multiple of EBITDA) above the ten-year YE average level.
- European multiples were down 0.1x quarter-over-quarter, averaging 10.7x EBITDA for all transaction sizes, with large and medium transactions each running at 11.3x and 10.8x, respectively.[3]
  - In Europe, the average senior debt/EBITDA level through 3Q 2018 was 5.5x, slightly higher than the 5.4x observed in full year 2017. This was also higher than the five-year and ten-year average levels of 5.1x and 4.8x, respectively.
- Debt remained broadly available in the U.S.
  - U.S. average leverage levels in 3Q 2018 were 5.8x compared to the five and ten year averages of 5.6x and 5.1x, respectively.[3]
  - The amount of debt issued supporting new transactions increased compared to year-end 2017 from 60.3% to 68.5% and remains above the 55.5% five-year average level.[3]

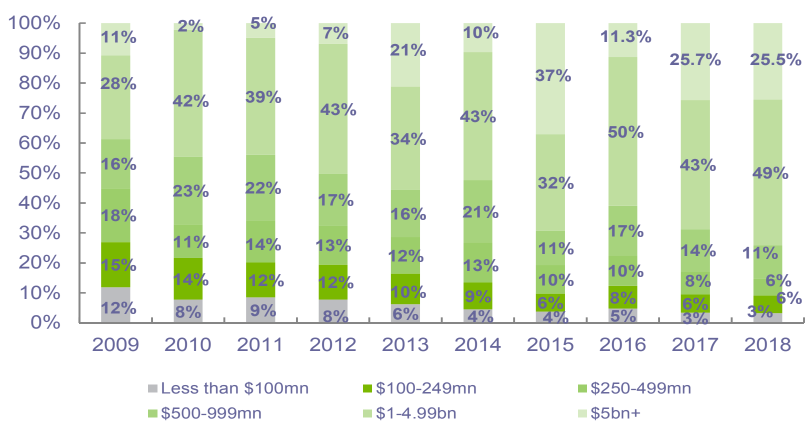
Buyouts / Corporate Finance

LTM PE Exit Volume and Value



Source: Preqin

M&A Deal Value by Deal Size



Source: Preqin

Fundraising

- $92.2 billion was closed on by 80 buyout and growth funds in 3Q 2018, compared to $58.5 billion raised by 82 funds the prior quarter.[1]
  - This was up compared to the five-year quarterly average of $72.3 billion.
  - Carlyle Partners VII was the largest partnership raised during the quarter, having raised $18.5 billion at final close.
- Buyout and growth equity dry powder was estimated at $858.4 billion, which was above the record level of $752.9 billion observed at year-end 2017 and was substantially higher than the five-year average level of $608.2 billion. This was also higher than the $824.9 billion of dry powder observed in Q1 2018, which represents the highest previous total in the last year.[1]
  - Dry powder for mega, large, mid, and small cap funds increased 6.4%, 2.4%, 3.9%, and 2.2% quarter-over-quarter, respectively. Mega fund dry powder finished the quarter up 10.0% from year end 2017.[1]
  - An estimated 54.5% of buyout dry powder was targeted for North America, while 29.5% was targeted for Europe.[1]

Activity

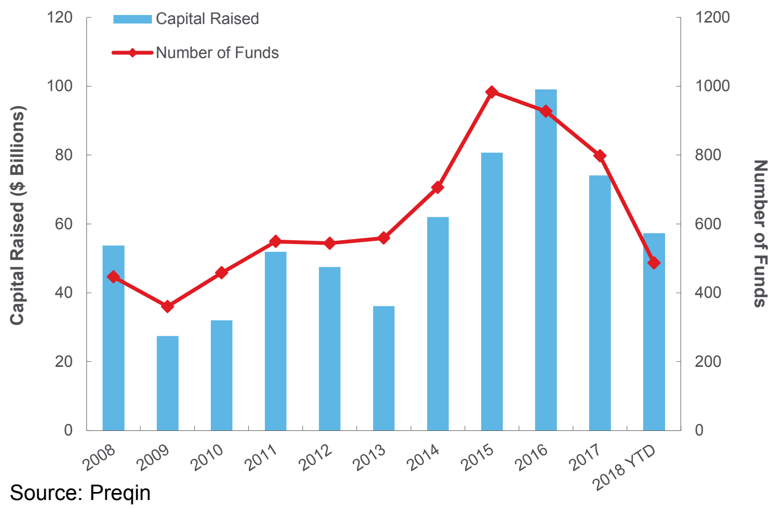
- Global private equity-backed buyout deals totaled $97.7 billion in 3Q 2018, which was down 22.5% from the prior quarter but up 26.7% from the five year average.[1]
  - 1,198 deals were completed during the quarter, which was down 5.7% from 2Q 2018 but was an increase of 8.6% compared to the five-year quarterly average.
  - Deals valued at $5.0 billion or greater accounted for an estimated 25.5% of total deal value during the quarter compared to 25.7% in 2017 and 11.3% in 2016.[1]
- Entry multiples for all transaction sizes in 3Q 2018 stood at 10.5x EBITDA, down slightly from year-end 2017 (10.6x). This is up significantly from 2Q 2018, where average entry multiples stood at 9.8x EBITDA.[3]
  - Large cap U.S. purchase price multiples stood at 10.5x, up compared to a full year 2017 level of 10.4x.[3]
  - The weighted average purchase price multiple across all European transaction sizes averaged 10.7x EBITDA in 3Q 2018, down from 10.8x at the end of 2Q 2018. Purchase prices for transactions of €1.0 billion or more increased from 11.6x at 2Q 2018 to 11.7x in 3Q 2018.[3]
  - Transactions between €500.0 million and €1.0 billion were flat from 2Q 2018, and stood at 10.8x at the end of 3Q 2018.[3]
  - The portion of average purchase prices financed by equity for U.S. deals was 41.4% in 3Q 2018, up slightly from 41.28% at year-end 2017; this remained higher than the five and ten-year full year averages of 39.0% and 39.7%, respectively.[3]
- Buyout exit value totaled $90.5 billion during the quarter, significantly lower than the $111.8 billion exit value seen in 2Q 2018. 3Q's total was primarily driven by trade sales ($64.1 billion, up quarter-over-quarter) and through sales to GPs ($20.7 billion, down quarter-over-quarter).[1]

Opportunity

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

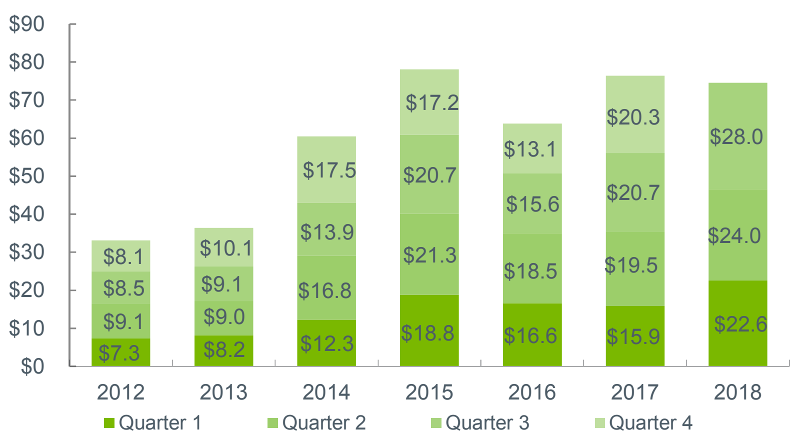
Venture Capital

Venture Capital Fundraising



Source: Preqin

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



Source: PwC/CB Insights Report

Fundraising

- $18.1 billion of capital closed in 3Q 2018, down from the 2Q 2018's total and the five-year quarterly average of $26.3 billion and $18.8 billion, respectively.[1]
  - 118 funds closed during the quarter, down 42.7% from the prior quarter and 42.9% from the five-year quarterly average.[1]
  - Insight Venture Partners X LP, which closed at $6.3 billion, was the largest fund raised during the quarter, closing on $2.7 billion in its final closing.[16]
- The average fund size raised during the quarter was approximately $168.0 million, which was higher than both the prior quarter and five-year quarterly average of $148.0 million and $116.3 million, respectively. The majority of funds in market are still seeking commitments of $200.0 million or less.[1]
- Dry powder was estimated at $226.7 billion at the end of 3Q 2018, which was up from 2Q 2018's total of $210.0 billion. This was 66.8% higher than the five year average. An estimated 46.2% of dry powder was targeted for North America, followed by approximately 36.9% earmarked for Asia.[1] Asia continues to gain a larger proportion of dry powder within the venture capital space, as seen by the almost 6% increase in market share since Q4 2017.

Activity

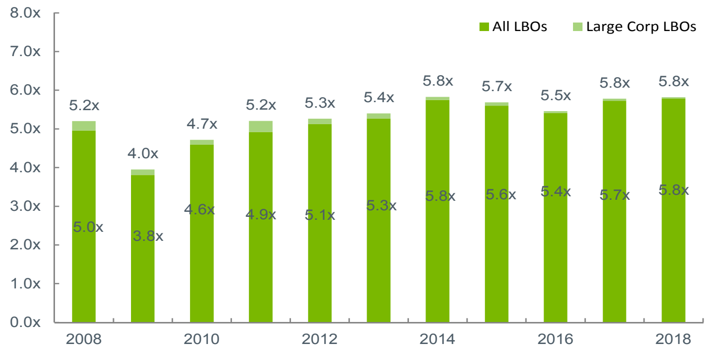
- During the third quarter, 1,325 venture backed transactions totaling $28.0 billion were completed, up from 2Q 2018's total value of $24.0 billion for 1,564 deals completed. This was the strongest quarter on a capital investment basis in the last five years, and marks the fifth consecutive quarter of $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 dramatically by 17 in 3Q 2018. At the end of 3Q 2018, there were an estimated 119 VC-backed companies marked as unicorns.[7]
- Median pre-money valuations increased across Series C and D+ financings, but dipped in Seed and Series B transactions during Q3. Pre-money valuations remained stagnant quarter-over-quarter for Series A. Series C and Series D+ increased by 66.1% and 82.9%, respectively, to valuations of $190.8 million and $450.0 million. Seed and Series B deal valuations were down 2.6% and 27.9% quarter-over-quarter and are currently valued at $7.8 million and $61.4 million, respectively. Series A pre-money valuations ended the quarter at $20.0 million.[9]
- Total U.S. venture backed exit activity totaled $20.9 billion across 182 completed transactions in 3Q 2018, down on a capital basis from $31.8 billion in 2Q 2018.[8]
  - There were 23 venture-backed initial public offerings during the quarter, lower than the 30 seen in Q2 2018, but still higher than the five-year quarterly average of 20. Over the last four quarters, liquidity through IPOs have produced the most value for US VCs, generating roughly $63.9 billion across 91 listings.[8]
  - The number of M&A transactions totaled 123 deals in 3Q 2018, representing a decrease of 18.5% from 2Q 2018.[8]

Opportunity

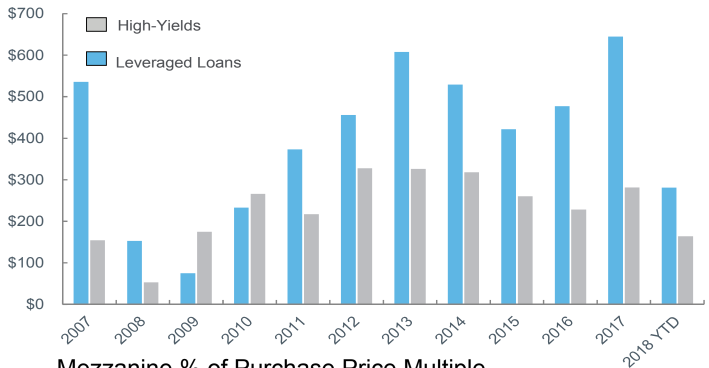
- Early stage continues to be attractive, although we are monitoring valuation increases.
- Smaller end of growth equity.
- Technology sector.

Leveraged Loans & Mezzanine

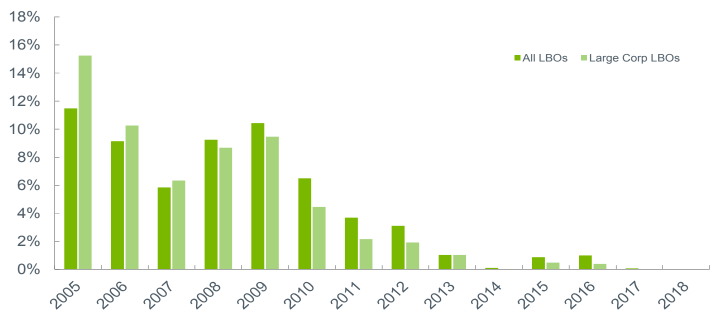
Average Leverage by Deal Size



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 $99.8 billion throughout the first nine months of 2018, up 22% compared to 3Q 2017's nine month total.[5]
- High-yield debt issuance totaled $49.8 billion in 3Q 2018, down from $51.7 billion in 2Q 2018.[2]
- Mutual fund net inflows stood at $11.6 billion at the end of 3Q 2018, which is up from the $8.6 billion in inflows through 2Q 2018.[2]

Activity

- The average leverage level for large cap LBOs was 5.8x during the quarter, equal to the 5.8x seen at year-end 2017. Leverage for all LBO transactions ended the quarter at 5.8x, compared to 5.7x at year-end 2017 and continues to be comprised primarily of senior debt. Subordinated debt levels remained at 0.0x during the quarter.[3]
- New leveraged loan issuances in 3Q totaled $85.0 billion, down from the prior quarter's total of $115.2 billion. This represents 13.2% of 2017's full year total.[2]
- 68.5% of new leveraged loans were used to support M&A and growth activity during the quarter, up from 60.6% during Q2 2018 and above the prior five year average of 55.5%.[3]
- European leveraged loan issuance increased by 41.5% quarter-over-quarter to €31.7 billion.[3]
  - This was significantly above the five-year and ten-year average levels of €15.8 billion and €10.5 billion, respectively.
- Leveraged loan spreads for B rated issues widened by 116 bps quarter-over-quarter, ending 3Q 2018 at 6.56%. BB index spreads decreased slightly by 112 bps, ending the quarter at 5.47%.[2]
- Despite some market choppiness in Q3 2018, loan issuance did not slow much as issuers continued to support opportunistic transactions for repricings and dividend recaps.[2]
- Despite solid loan issuance, the predominance of covenant-lite loans coupled with a general trend of loosening loan terms continue to raise questions about expected recovery rates in a downturn.[2]

Opportunity

- Funds with the ability to originate deals directly and the ability to scale for larger transactions.
- Funds focused on the highest quality opportunities and structuring deals in the highest part of the capital structure.

Mezzanine

Fundraising

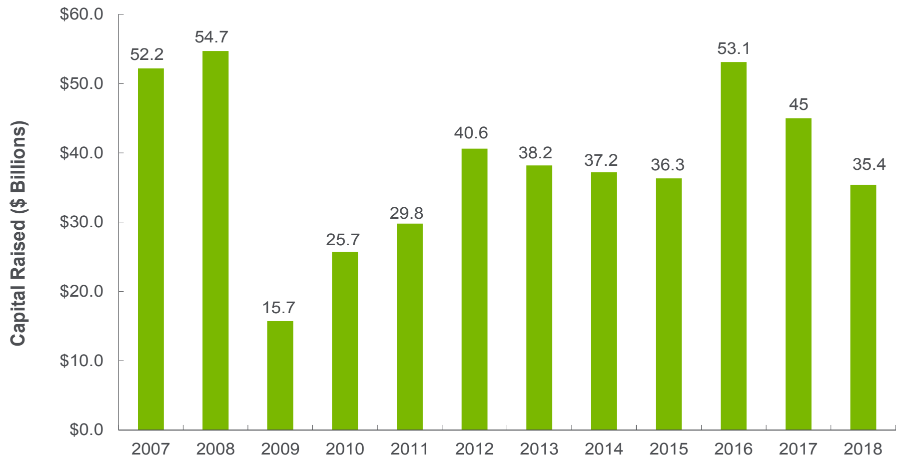
- Ten funds closed on $1.4 billion during the quarter, significantly down from 2Q 2018's total of $15.3 billion raised by eight funds and the five year quarterly average of $5.4 billion.[1]
- Estimated dry powder was $58.0 billion at the end of 3Q 2018, up by $7.0 billion from 4Q 2017 and higher than the $53.1 billion high seen at year-end 2016.[1]
- Fundraising remains robust with an estimated 76 funds in market targeting $21.3 billion of commitments.[1]

Opportunity

- Subordinated debt continues to evaporate in the US middle-market space to the benefit of the unitranche offering. [2]

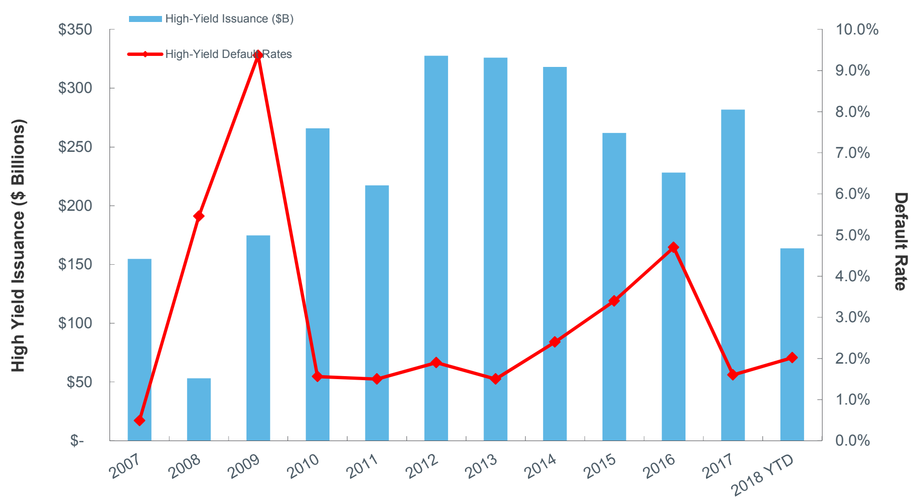
Distressed Private Markets

Distressed Debt, Turnaround, & Special Situations Fundraising



Source: Thomson Reuters

High-Yield Bond Volume vs Default Rates



Source: UBS & Fitch Ratings

Fundraising

- During the quarter, $6.8 billion was raised by 13 funds, significantly lower than the $18.5 billion raised during 2Q 2018. This was the lowest amount raised since Q3 2016.[1]
  - This was below the five-year quarterly average of $11.0 billion.
  - Avenue Energy Opportunities Fund II and Monarch Capital Partners IV were the largest partnerships raised during the quarter, closing on $1.0 billion each to invest in distressed debt.
- Dry powder was estimated at $119.5 billion at the end 3Q 2018, which was up 14.5% from 4Q 2017. This remained above the five-year annual average level of $97.2 billion.[1]
- Roughly 112 funds were in the market at the end of 3Q 2018, seeking an aggregate $66.4 billion in capital commitments.[1]
  - Fortress Credit Opportunities Fund V and GSO Energy Select Opportunities Fund II were the largest funds in market seeking $5.0 billion of capital each.

Activity

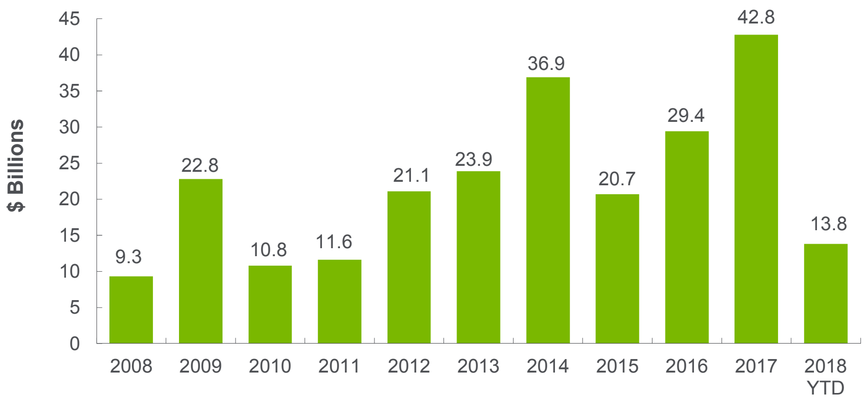
- The TTM U.S. high-yield default rate was 2.02% as of September 2018, which was up from December 2017's LTM rate of 1.27%.[6]
- Default rates remain near all-time lows and appear to be headed lower as easy access to credit keeps companies from defaulting. However, the amount of junk-rated paper issued in the U.S. over the past few years suggests rougher performance may occur in the near term.
- The credit risk environment remains benign, but the impact of rising interest rates is becoming more and more pertinent, and further positive returns driven by multiple expansion will be limited.[4]
- Consistently high purchase prices and elevated levels of leverage may result in an increase in distressed opportunities looking out over the next two to three years, or sooner if there is a prolonged stall in the economy.

Opportunity

- Funds focused on niche opportunities where the manager has the ability to quickly move on opportunities as they arise.
- Funds with the ability to perform operational turnarounds.

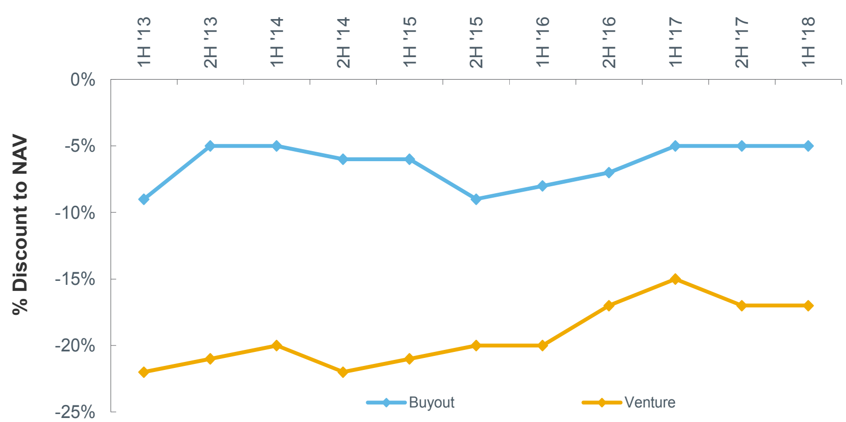
Secondaries

Secondary Fundraising



Source: Preqin

Secondary Pricing



Source: Evercore

Fundraising

- Seven funds raised $4.0 billion during the third quarter, up from $3.1 billion raised by 12 funds in 2Q 2018, but lower than the $13.4 billion raised by seven funds in 3Q 2017.[1]
  - Through 3Q 2018, aggregate capital raised represents 28.9% of 2017's full year total.
  - The average size raised per fund was $571.4 million during Q3 2018, significantly lower than the average fund size of $1.9 billion seen in Q3 2017.
  - Pomona Capital IX was the largest fund raised during the quarter, closing on $1.8 billion with a final close in September.[1]
- As of 1H 2018, dry powder was estimated to be at $64.0 billion, which was lower than 4Q 2017's level of 77.0 billion.[17] The top 14 secondary buyers are estimated to command more than 80.0% of the market's capital reserves. The top 20 buyers are estimated to hold more than 90.0% of the market's dry powder.[17]
- Through 3Q 2018, there were an estimated 46 secondary and direct secondary funds in market, targeting approximately $56.8 billion. Lexington Capital Partners IX and Ardian's ASF VIII were the largest funds in the market, each targeting $12.0 billion.[1]
  - Over 61.5% of secondary funds are targeting North America and seek 48.1% of capital being raised.

Activity

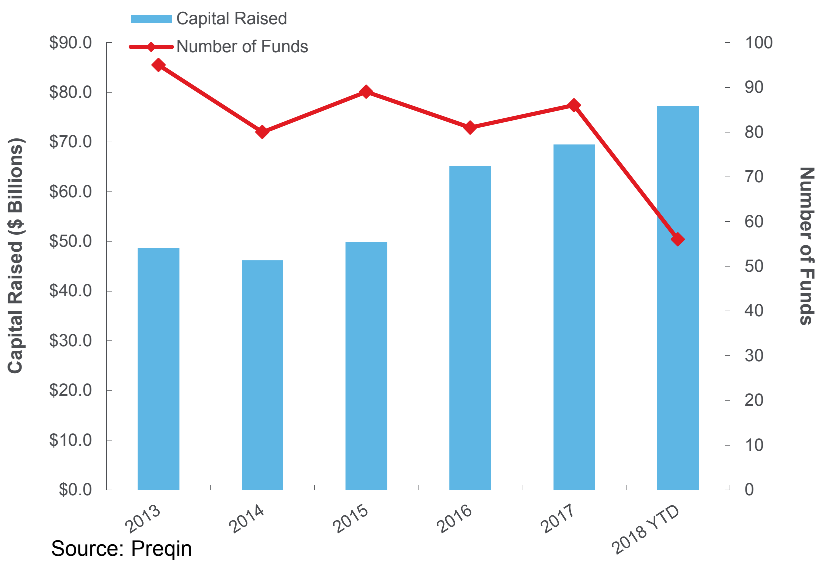
- More than 900 potential buyers and nearly 886 potential sellers of secondary interests have been identified.[1]
  - Banks represent the largest proportion of potential sellers at 20.0%.
- Transaction and fund leverage and deferred payment structures continue to be prevalent and are used as a means to improve pricing in an increasingly competitive environment.[17]
- 81.0% of secondary transactions have occurred within private equity (with the rest in real estate and infrastructure) through 2Q 2018. The average buyout pricing discount ended at 5.0% for 2Q 2018, while venture ended at a discount of 17.0%.[17]
- Pricing is expected to remain attractive for sellers given the continued high levels of dry powder and competition for secondary transactions.[17]

Opportunity

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

Infrastructure

Global Infrastructure Fundraising



Source: Preqin

Number of Deals Completed

Source: Preqin

Fundraising

- $43.6 billion of capital was raised by 26 funds in 3Q 2018 compared to $18.9 billion of capital closed on by 17 partnerships in 2Q 2018. This was the largest amount of capital raised in a quarter over the last five years, and marks a substantial increase over the previous highest single-quarter fundraising amount of $32.0 billion seen in Q1 2017. Through Q3 2018, infrastructure funds have already raised 102.8% of 2017's total.[1]
  - Funds raised during the quarter averaged 122.2% of their target size, which was up from 101.2% in Q4 2017.[1]
  - KKR Global Infrastructure Investors III held its final close on $7.4 billion and was the largest fund closed during Q3 2018.[1]
- As of the end of 3Q 2018, there were an estimated 187 funds in the market seeking roughly $146.7 billion.[1]
  - Funds focused on infrastructure assets in the U.S. were targeting an estimated $60.1 billion in capital, while European focused funds were targeting approximately $49.9 billion.[1] The remainder of capital targets Asia and the rest of the world.
- At the end of the quarter, dry powder stood at an estimated $173.3 billion, up from Q2 2018 at $161.0 billion.[1] Based on fund classifications by Preqin, an estimated 46.9% of the dry powder was held by Mega Funds (funds with commitments of $2.0 billion or more), compared to 16.8% for Large Funds ($1.0 billion to $1.9 billion in size) and 10.8% for Medium Funds ($500.0 million to 999.9 million in size).[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

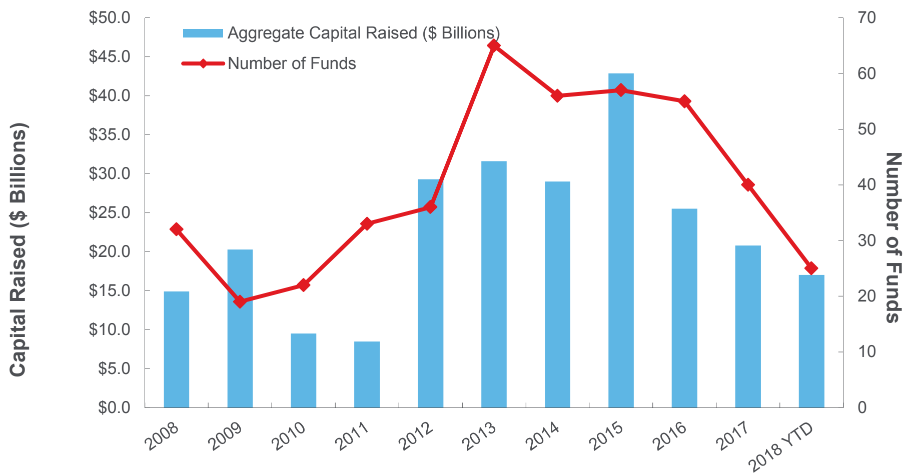
- Infrastructure managers completed 506 deals with an estimated aggregate deal value of $238.7 billion in 3Q 2018 compared to 663 deals totaling $238.2 billion a quarter ago.[1] The average deal value during the quarter was $691.0 million, significantly higher that the five-year average of $432.9 million.
  - North America accounted for 37.0% of the deals in 3Q 2018, while 34.0% and 14.0% of deals were transacted in Europe and Asia, respectively.[1]
  - Renewable energy was the dominant industry during the quarter with 60.0% of transactions, followed by the energy sector, which accounted for 15.0% of the quarter's deals. Utilities accounted for 12.0% of transactions.[1]

Opportunity

- Greenfield infrastructure is less competitive and offers a premium for managers willing to take on construction risk.
- Mid-market and core-plus brownfield infrastructure is relatively less competitive and may offer better relative value to investors.

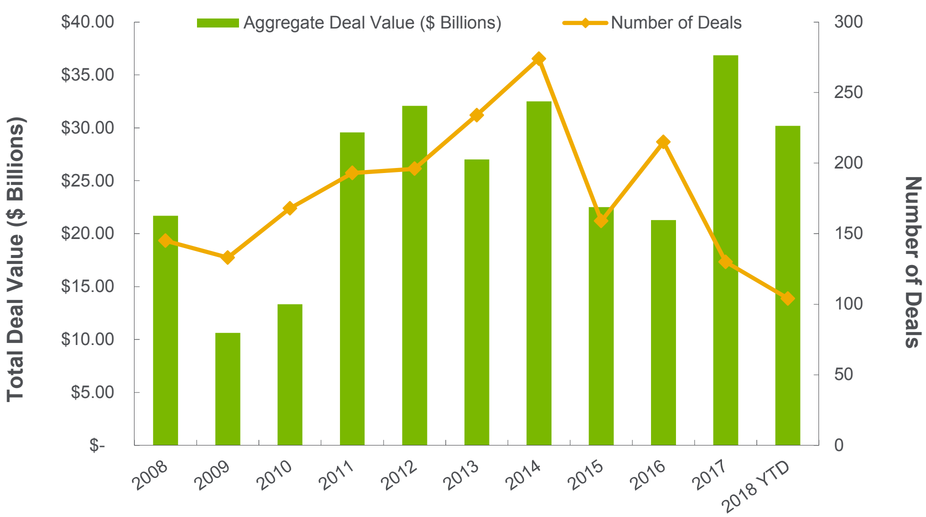
Natural Resources

Natural Resources Fundraising



Source: Preqin

Energy & Utilities Deal Activity



Source: Preqin

Fundraising

- During 3Q 2018, seven funds closed on $6.4 billion compared to nine funds totaling $2.9 billion in 3Q 2017. This also marked an increase from the $2.7 billion raised by seven funds during Q2 2018.[1]
- At the end of 3Q 2018, there were roughly 316 funds in the market targeting an estimated $182.0 billion in capital, compared to 288 funds seeking an estimated $145.2 billion in 2Q 2018.[1]
  - Global Infrastructure Partners IV was seeking the most capital with a target fund size of $20.0 billion. EQT Infrastructure IV was also raising capital during Q3, targeting €8.0 billion to make investments in Europe.
- Dry powder was estimated at $59.3 billion at the end of 3Q 2018, which was down 5.7% from 2Q 2018's level, and remains below the record level of $78.2 billion observed in 4Q 2016.[1]

Activity

- Energy and utilities industry managers completed 41 deals totaling a reported $9.4 billion in 3Q 2018, down 21.8% on a value basis and up 17.1% on a number basis over 2Q 2018 levels. Aggregate deal value reached $30.2 billion at the end of Q3, representing 81.9% of 2017's total deal value.
- Crude oil prices both increased and decreased during the quarter.
  - WTI crude oil prices decreased 1.6% during the quarter to $72.84/bbl.[11]
  - Brent crude oil prices ended the quarter at $81.85/bbl, up 8.8% from 2Q 2018.[11]
- Natural gas prices (Henry Hub) increased by 2.7% during the third quarter, ending at $3.06 per MMBtu.[11]
- A total of 1,054 crude oil and natural gas rotary rigs were in operation in the U.S. at the end of 3Q 2018, up by 7 rigs from the previous quarter. Crude oil rigs represented 81.9% of the total rigs in operation.[15]
- The price of iron ore (Tianjin Port) ended the third quarter at $68.44 per dry metric ton, up 5.2% 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.

Notes

1. Preqin
2. UBS
3. Standard & Poor's
4. Aon Hewitt Investment Consulting
5. Thomson Reuters
6. First Trust Advisors
7. PriceWaterhouseCoopers/National Venture Capital Association MoneyTree Report
8. PitchBook/National Venture Capital Association Venture Monitor
9. Cooley Venture Financing Report
10. Federal Reserve
11. U.S. Energy Information Administration
12. Bloomberg
13. Setter Capital Volume Report: Secondary Market 1H 2018
14. KPMG and CB Insights
15. Baker Hughes
16. Dow Jones Venture Capital Report
17. 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

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Appendix B:

Real Estate Market Update

3Q 2018

United States Real Estate Market Update (3Q18)

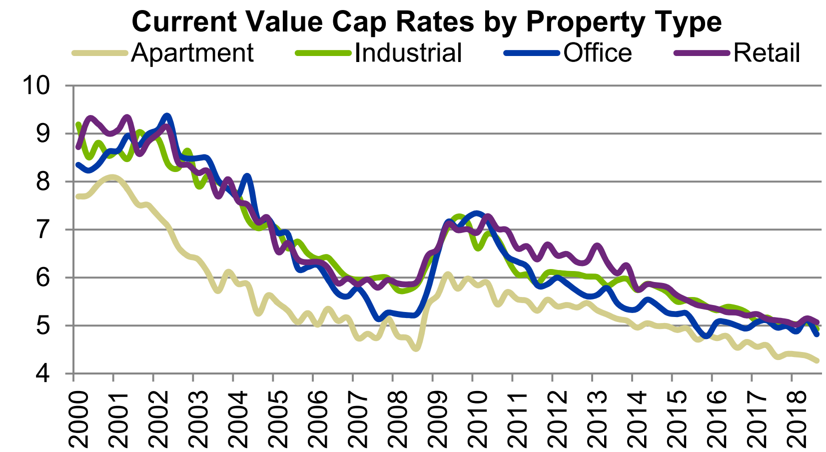
General

- The S&P 500 produced a gross total return of 7.7% during the Quarter, as markets rebounded from tightening monetary policy and trade war rhetoric on the back of strong economic data. The MSCI US REIT index produced a return of 1.1%. REITS continue to lag broader equity market performance. Consumer Sentiment reached its second highest point year-to-date during the Quarter, hitting 101.1.
- Macro indicators for U.S. real estate continue to be positive; GDP grew at an annualized rate of 3.5% in the Third Quarter and headline CPI rose by 2.3% YoY, above the Fed's 2% target. As of Quarter-end, the economy has now experienced 96 consecutive months of job growth. The Federal Reserve has continued to tighten monetary policy, with the effective federal funds rate reaching 1.95% at Quarter-end.

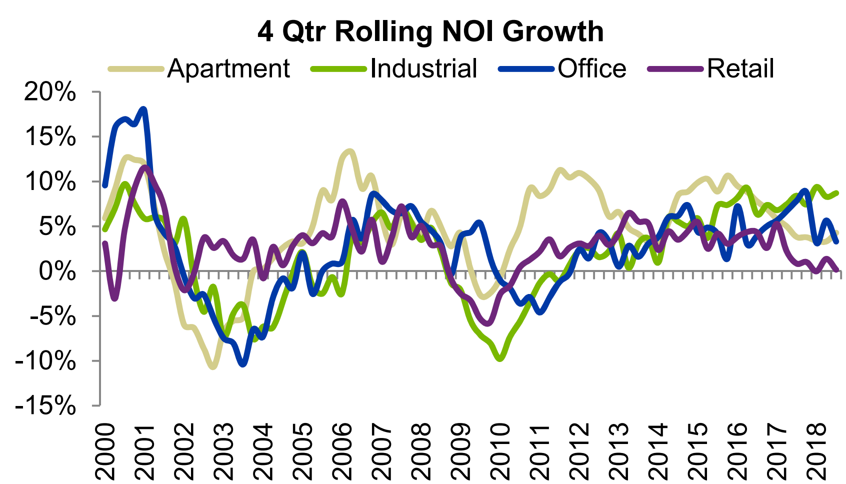
Commercial Real Estate

- Private Real Estate Market values continued to remain flat over the quarter. Transaction cap rates (5.5%) also remained flat during the quarter. At the same time, current valuation cap rates compressed across property sectors, with the office and industrial cap rates contracting the most, 31 bps and 14 bps, respectively.
- NOI growth by sector continued to deviate during the Quarter, with retail NOI growth continuing to lag other sectors. Positive momentum continues in the industrial sector, benefiting from e-commerce and economic growth. The sector experienced 8.7% NOI Growth over the last year.
- In the Third Quarter of 2018, $27bn of aggregate capital was raised by Real Estate Funds. To date in 2018, Private Equity Real Estate Funds have raised $111.2bn, which is similar in size to the prior 5 years.
- 10-year treasury bond yields expanded 20 bps to 3.06% during the quarter, and subsequent to quarter end have dropped back below 3.0%. A combination of expansionary fiscal policy and tightening monetary policy have led to increasing short-term interest rates and a flattening 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 (3Q18)

TOWNSEND® GROUP an Aon company

INDUSTRIAL

- As of 3Q18, industrial properties returned 3.4% and outperformed the NPI by 168 bps.
- Transaction volumes reached $54.7 billion YTD, marking a 16% year-over-year increase. Large-scale portfolio sales are expected make 2018 the largest overall historic year in terms of total activity, increasing the difficulty for investors trying to gain exposure.
- Cap rates are averaging 4.6%, representing 15 bps reduction year-over-year.
- Vacancy remained stable at 4.8%, a 20 bps reduction year-over-year, continuing to be at an all-time historic low. Strong demand has pushed asking rents up 6.3% year-over-year.
- Increased investor demand for industrial assets, coupled with limited acquisition opportunities are pushing investors into secondary markets and driving valuations to all-time highs. Secondary markets are averaging a 50 to 100 bps spread over primary markets for Class A product.

MULTIFAMILY

- The apartment sector delivered a 1.5% return during the Quarter, underperforming the NPI by 13 bps.
- Transaction volume YTD has reached $115.7 billion, an increase of 14.7% year-over-year. Sector outperformance has made multifamily the most actively traded sector of 2018. The increase in 3Q can be attributed to portfolio sales, which increased 74.3% over 2Q.
- Despite increased completions, vacancy declined by 25 bps year-over-year to 4.7%. Rent growth year-over-year now stands at 3.9%, an increase of 20bps.
- Primary market stability has led to an increase in transaction activity, increasing 8.7% YTD.
- Transaction volume of high-rise apartments has increased 41.9% year-over-year, indicating increased investor attention. Despite accounting for 5.9% of multifamily inventory, currently 26.2% of the development pipeline is high-rise developments.

OFFICE

- The office sector returned 1.7% in 3Q18, 1 bps above the NPI return over the period.
- Transaction volumes have increased by 2.9% despite fewer trades, driven by larger asset sales. YTD sales volumes totaled $93.1 billion as of Q3.
- Total vacancy rose by 40 bps to 15.3% quarter-over-quarter due to the rising deliveries. 30.0 million sqft has been delivered YTD, with absorption trending 29.0% lower in 2018 than 2017.
- Investors are shifting attention to primary markets as they target lower risk markets with increased liquidity and longer-term hold assets that can endure through market cycles. Volumes in primary CBDs has increased 3.5% year-over-year, while secondary markets have declined by 8.4% over the same period.
- Foreign investment has declined by 22.3% YTD as currency hedging costs have become prohibitive to yield requirements.

RETAIL

- As of 3Q18, the retail sector delivered a quarterly return of 0.6%, performing 111 bps below the NPI.
- Transaction volumes totaled $56.9 billion YTD, driven by large entity-level transactions. Including these entity-level sales, YTD sales growth increased 36.1%. Excluding the large portfolio sales, volume was down 26.8% year-over-year.
- Despite the continued announcement of store closures, 12-month rental growth was 5.8%, largely driven by grocery-anchored centers.
- Average cap rates remain at 4.3%. Premier assets continue to trade aggressively, driven by foreign demand, while malls in non-core markets show little interest from investors.
- Vacancy declined to 4.5%, a compression of 12 bps compared to the second quarter of 2018. As retailers continue to announce store closures, vacancy is anticipated to start to increase on a go-forward basis.

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

Global Real Estate Market Update (3Q18)

- Global investment activity has continued to exceed expectations through the end of 2018, with investment volumes expected to reach the highest levels since 2007. Year-to-date, the three most active cities were New York City, Los Angeles, and London, respectively.
- There are signs that investment volumes will begin to moderate during 2019, estimated to decrease by approximately 5%.
- The U.S. economic growth has continued to bolster the global economy, however, investors continue to consider elevating trade tensions, political uncertainty, and a rising U.S. interest rate environment. Despite these concerns, investing in real estate remains attractive.

Global Total Commercial Real Estate Volume - 2017 - 2018

$ US Billions	Q3 2018	Q3 2017	% Change Q3 18 - Q3 17	YTD 2018	YTD 2017	% Change YTD 18 - YTD 17
Americas	139	119	17%	353	318	11%
EMEA	57	81	-29%	205	225	-9%
Asia Pacific	199	223	-11%	622	546	14%
Total	395	422	-7%	1180	1089	8%

Source: Real Capital Analytics, Inc., Q3' 18

- While overall investment activity fell in EMEA, there is still capital flowing into UK real estate, with London remaining a top investment destination. However, uncertainty regarding Brexit could reduce investor confidence in the region. Germany and France again recorded increased investment activity during the quarter.
- In Asia Pacific, Seoul recorded all-time highs in investment volumes during the quarter, while increased interest rates and competitive pricing slowed the transaction volumes in Hong Kong.
- In the office sector, global leasing markets have remained active. Leasing volumes by year-end 2018 are expected to be at the highest level since 2007, with Asia Pacific seeing the strongest leasing activity. Leasing volumes in 2019 are expected to lower than 2017 and 2018, but still higher than the 10-year average. Prime office rental growth is expected to remain positive through 2019, with the top rental performers likely to include San Francisco, Boston, Singapore, Sydney, Madrid, Moscow, Stockholm, Amsterdam, and Berlin.
- The focus in the retail sector continues to be on customer experience, incorporating a mix of retail and non-retail tenants, such as food and beverage, fitness centers, and lifestyle brands. In Europe, increasing wage growth supports a stronger retail sales outlook, and in Asia Pacific, retail rents have continued to be stable.
- Fundamentals for logistics have continued to be strong, with global logistics markets showing record demand and historically low vacancy rates. While there is expanding supply, industrial leasing is still robust in Europe and Asia Pacific has continued to see rent increases in most markets.

Global Outlook - GDP (Real) Growth % pa, 2018-2020

	2018	2019	2020
Global	**3.7**	**3.7**	**3.7**
Asia Pacific	**5.5**	**5.2**	**5.3**
Australia	3.2	2.8	2.7
China	6.6	6.2	6.2
India	7.3	7.4	7.7
Japan	1.1	0.9	0.3
North America	**2.7**	**2.5**	**1.9**
US	2.9	2.5	1.8
MENA*	**2.0**	**2.5**	**2.9**
European Union	**2.2**	**2.0**	**1.8**
France	1.6	1.6	1.6
Germany	1.9	1.9	1.6
UK	1.4	1.5	1.5

*Middle East North Africa

Source: International Monetary Fund (October 2018)

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

TAB I

Report

PCA Investment Market Risk Metrics

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PCA PENSION CONSULTING ALLIANCE

PCA INVESTMENT MARKET RISK METRICS

Monthly Report

January 2019
(as of 12/31/18)

Takeaways

- December completed what proved to be a challenging year for nearly all risk-based assets. While calendar year returns for most markets were well within expectations (albeit negative), the rampant volatility of October and December culminated in a historically poor quarter for global equity markets.

- Despite recent market declines, U.S. Equity markets remain expensive whereas non-U.S. markets remain reasonably valued.

- U.S. Credit spreads have widened to historical average levels.

- Coinciding with severe equity market declines in December was the strong performance of U.S. Treasury bonds. As a result of this activity, duration risk has increased and the yield curve has continued to flatten.

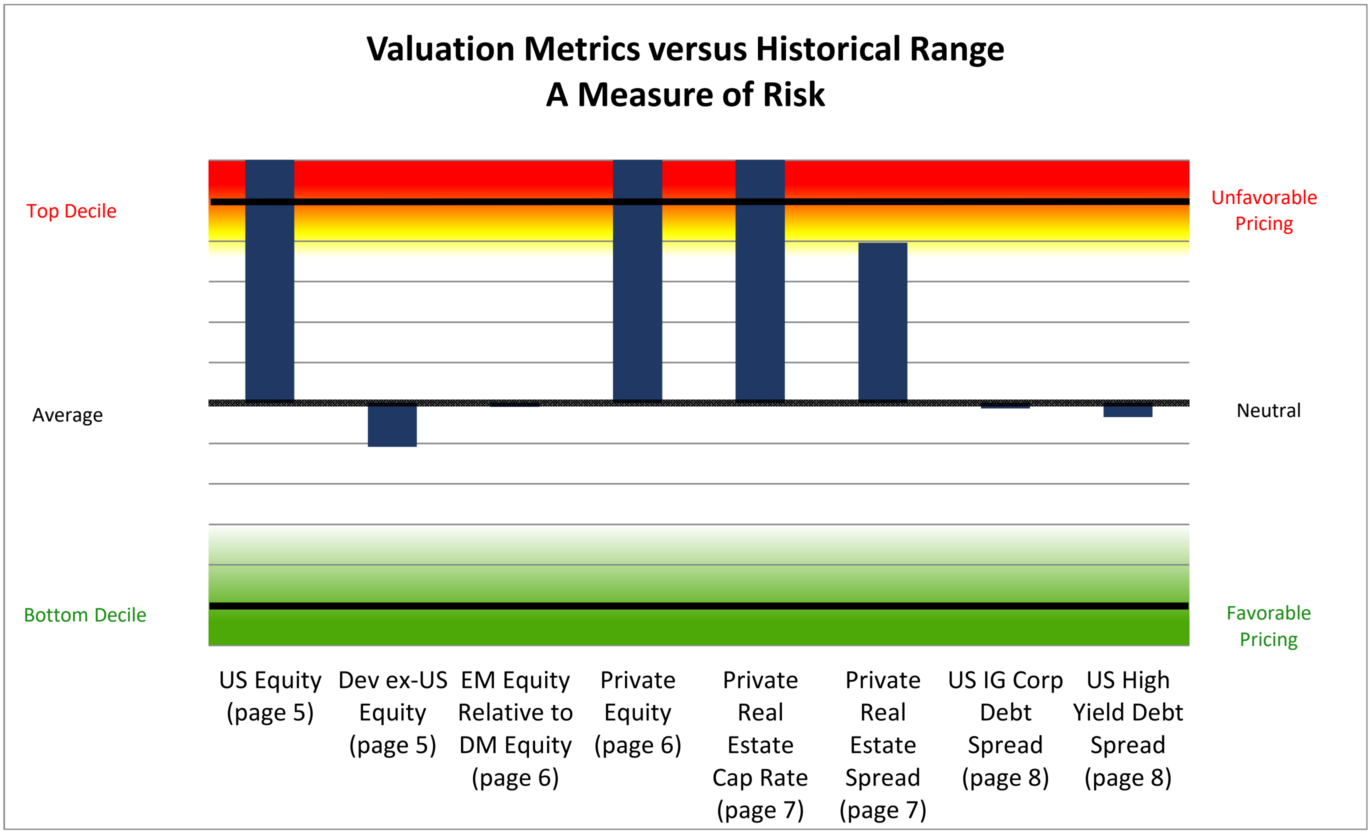
- Risk assets have entered a higher risk regime that appears to be gaining traction. Implied equity market volatility(i.e.,VIX) spent the majority of December above its long-term average level of 19.3, including spending several days above 30 near month-end.

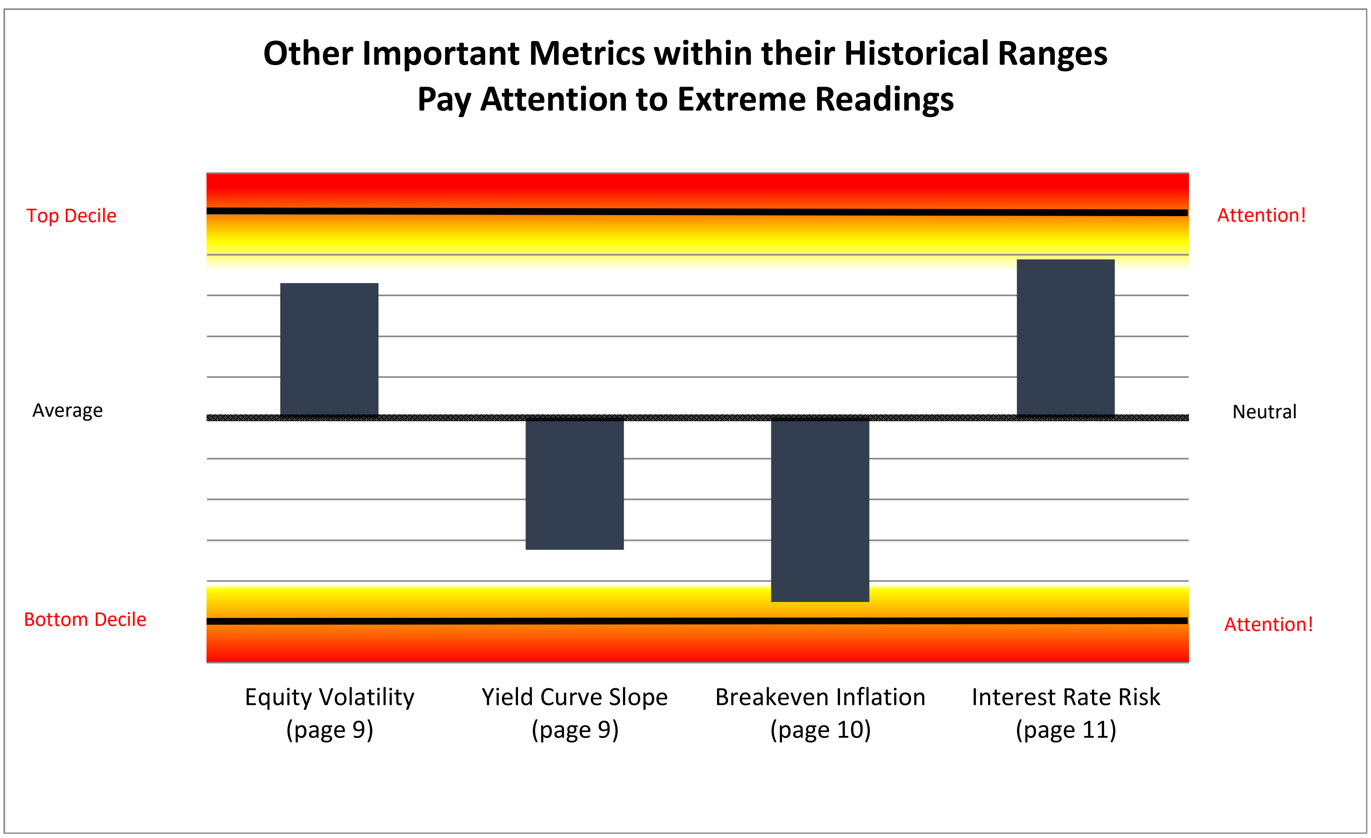
- PCA's Market Sentiment Indicator (page 4) flipped to negative (**red**) as a result of negative one-year returns in equity markets and corporate bond spreads.

- **Economies and markets appear to be in transition.** Diverging global economic growth, diverging global monetary policy, and ongoing geopolitical turmoil has resulted in a high degree of uncertainty in the global capital markets.

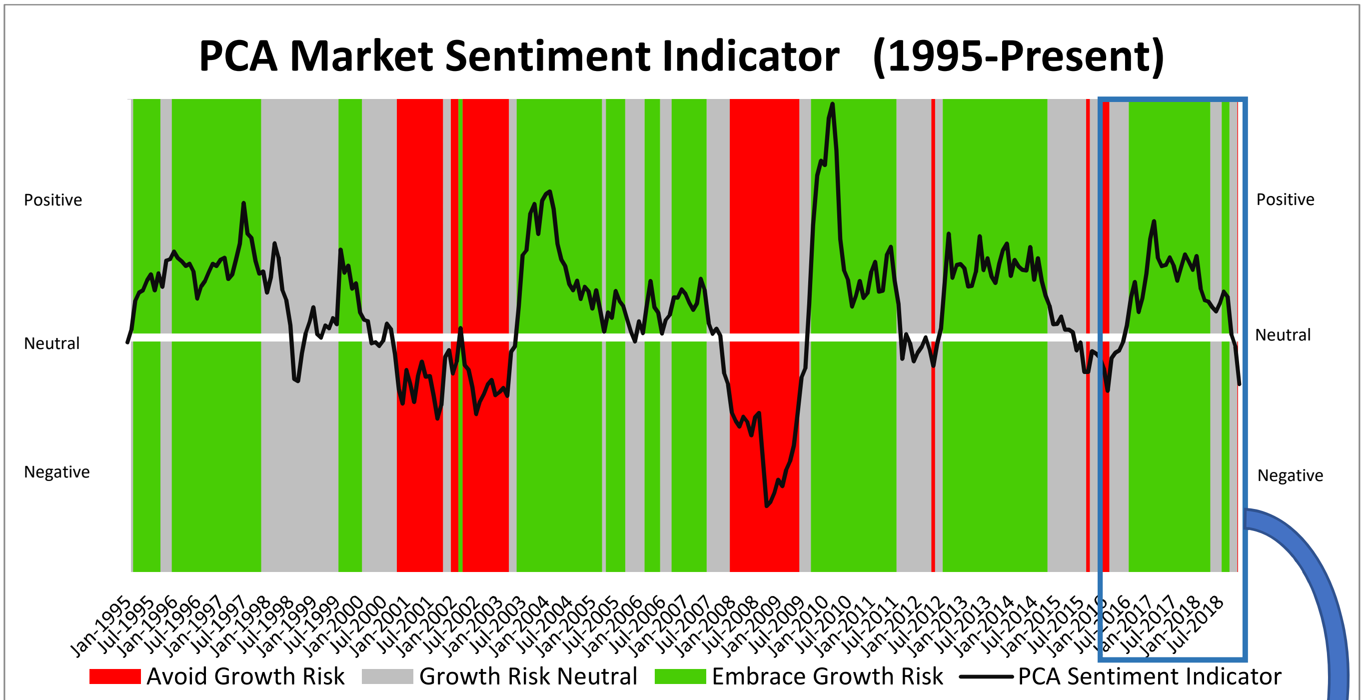
[1]See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

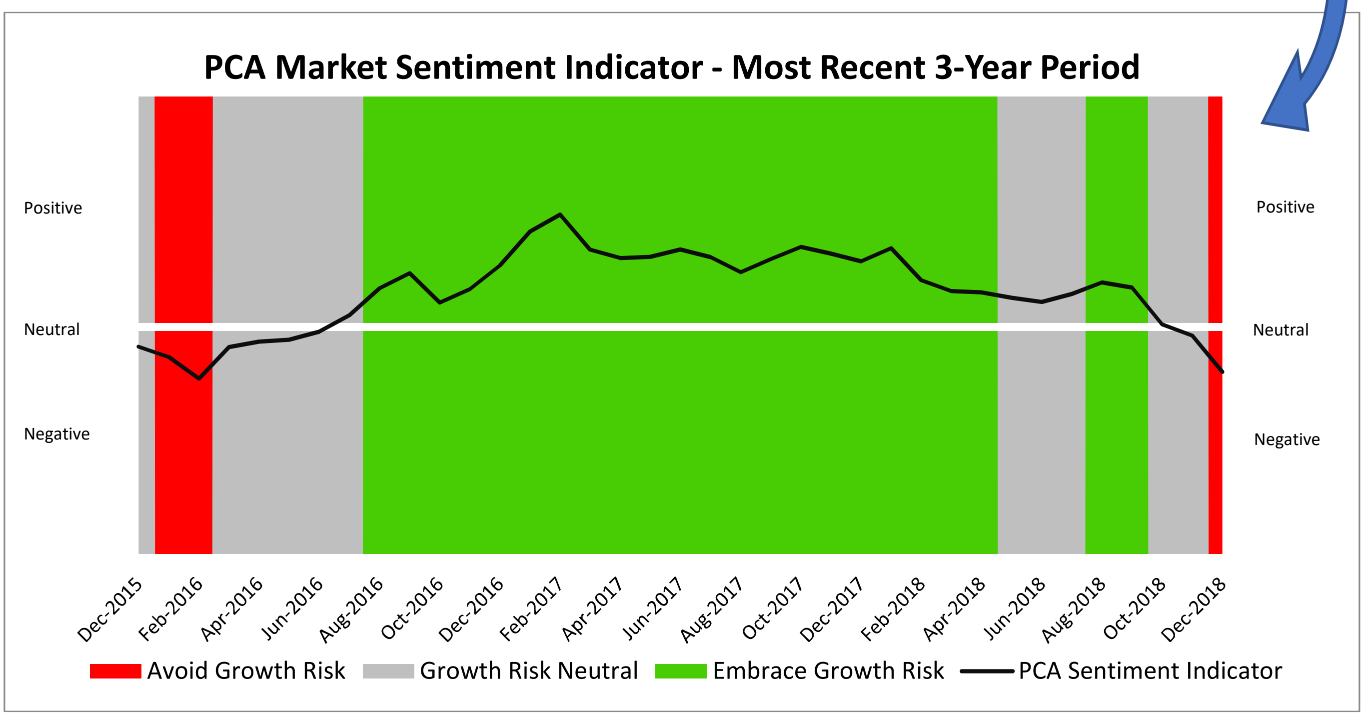
Risk Overview





Market Sentiment



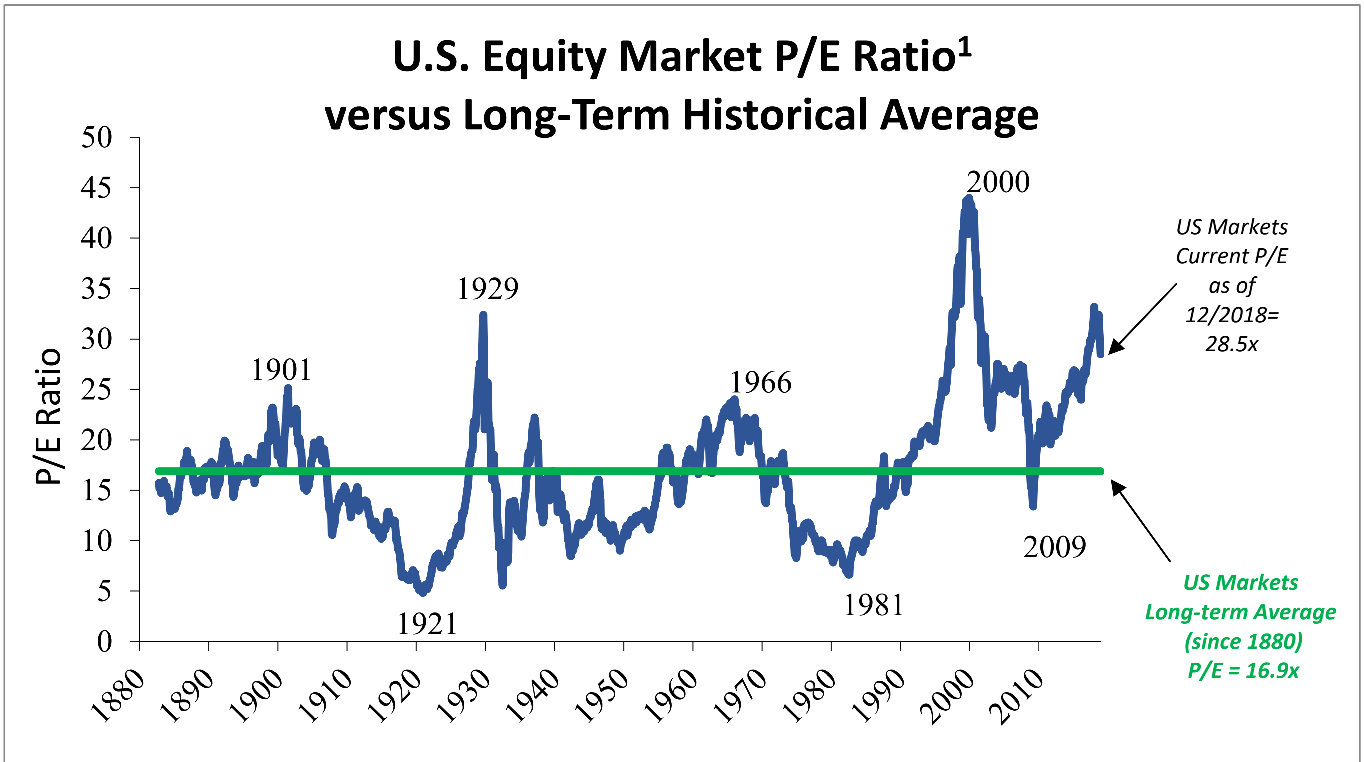


Information Behind Current Sentiment Reading

Bond Spread Momentum Trailing-Twelve Months	Negative
Equity Return Momentum Trailing-Twelve Months	Negative
Agreement Between Bond Spread and Equity Spread Momentum Measures?	Agree
Growth Risk Visibility (Current Overall Sentiment)	**Negative**

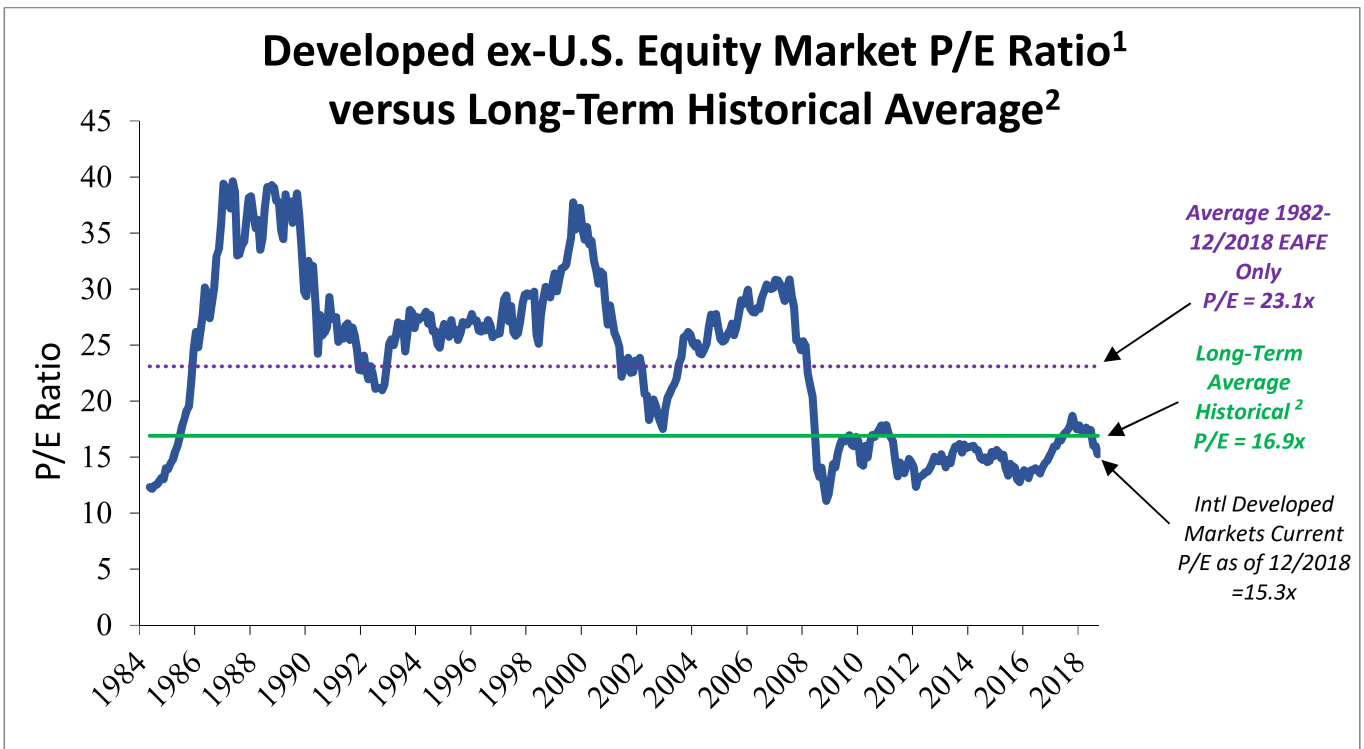
PENSION CONSULTING ALLIANCE

Developed Public Equity Markets



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

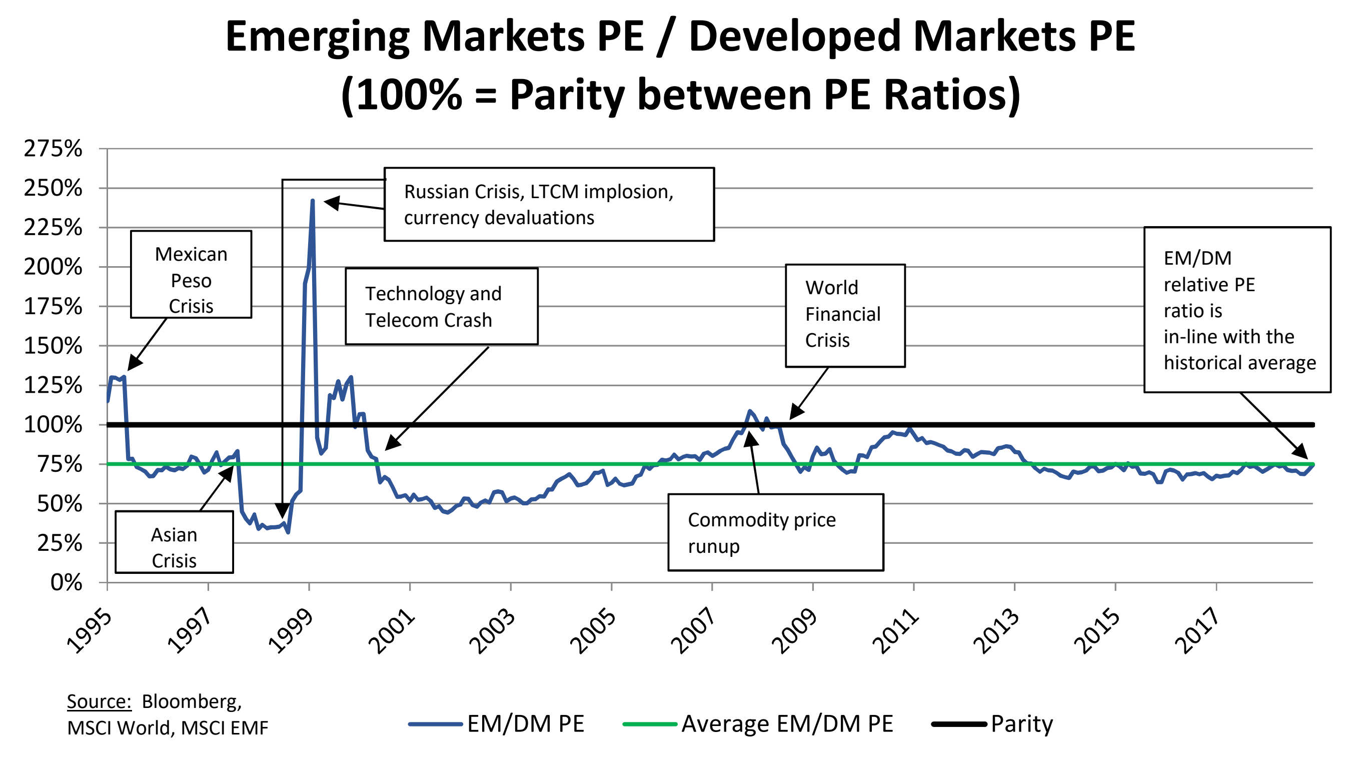
(Please note the difference in time scales)



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

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

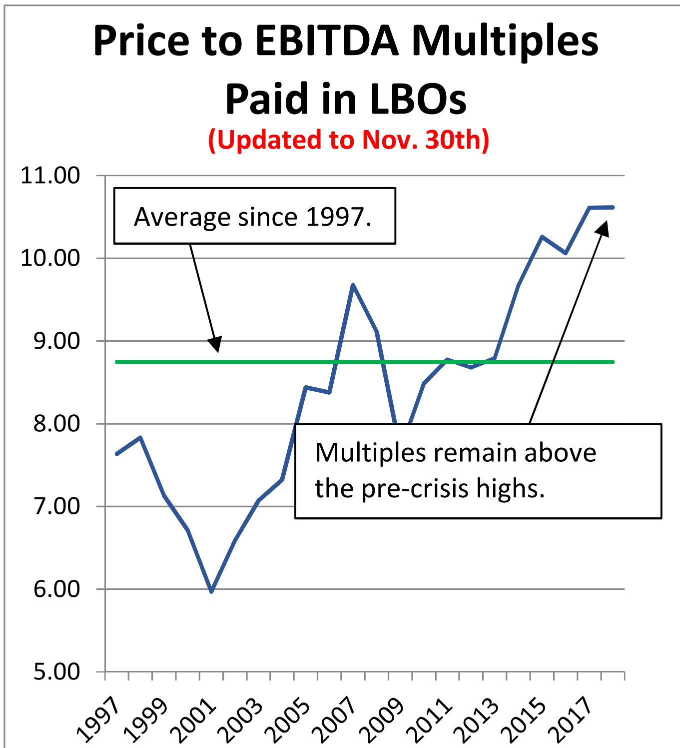
Emerging Market Public Equity Markets



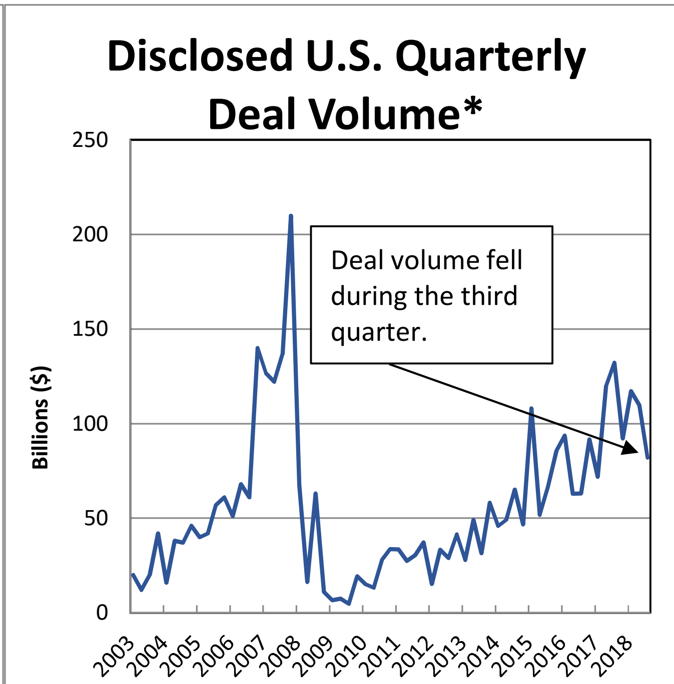
Source: Bloomberg, MSCI World, MSCI EMF

US Private Equity

Quarterly Data, Updated to September 30th



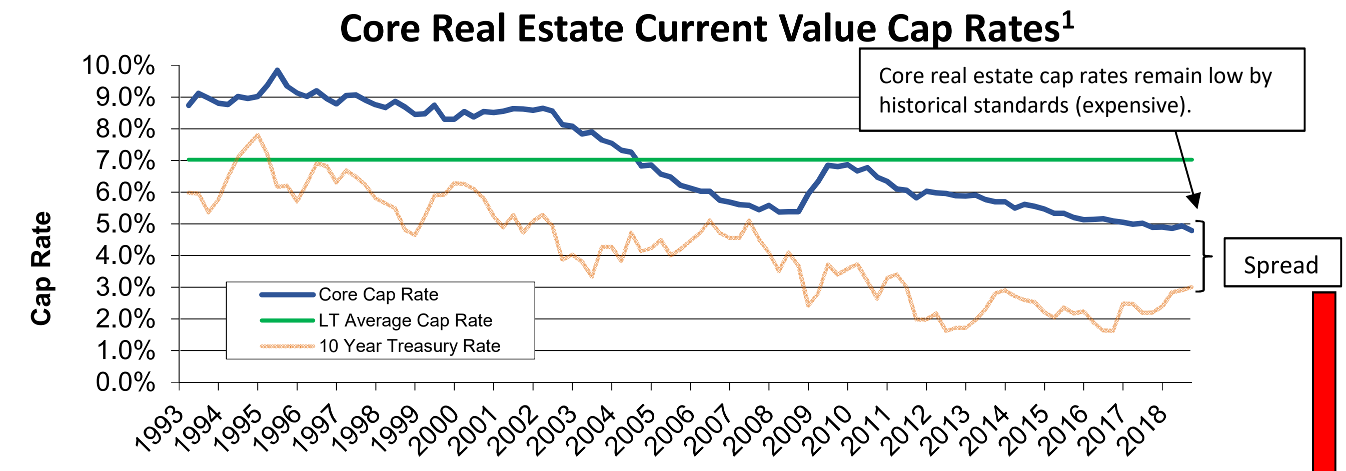
Source: S&P LCD study



Source: Thomson Reuters Buyouts
* quarterly total deal size (both equity and debt)

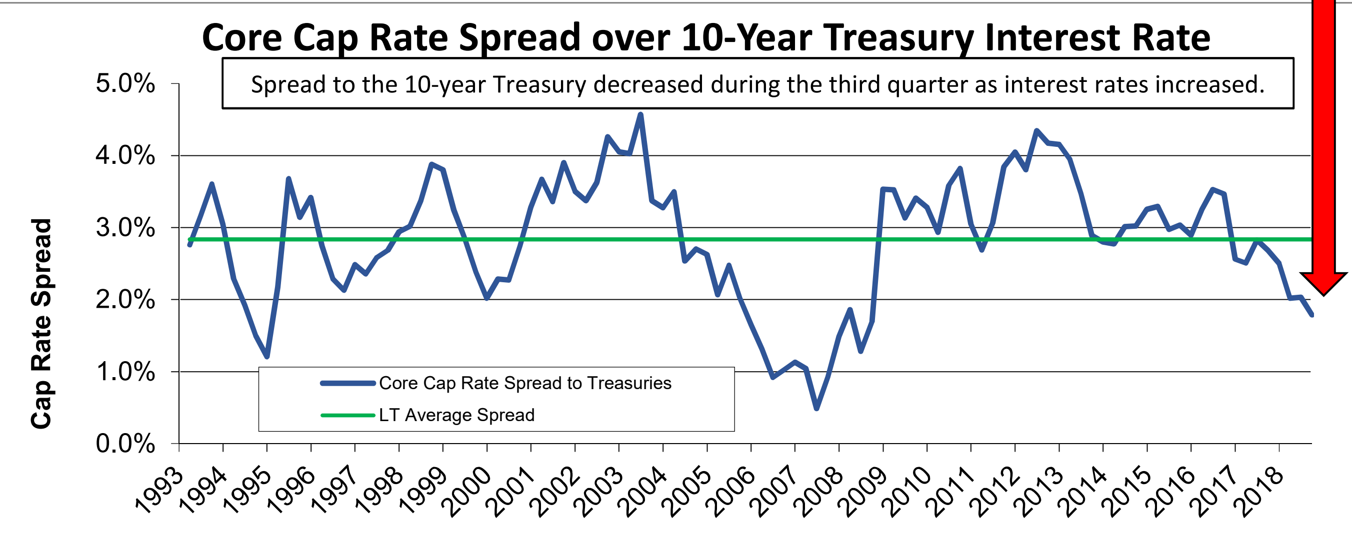
Private Real Estate

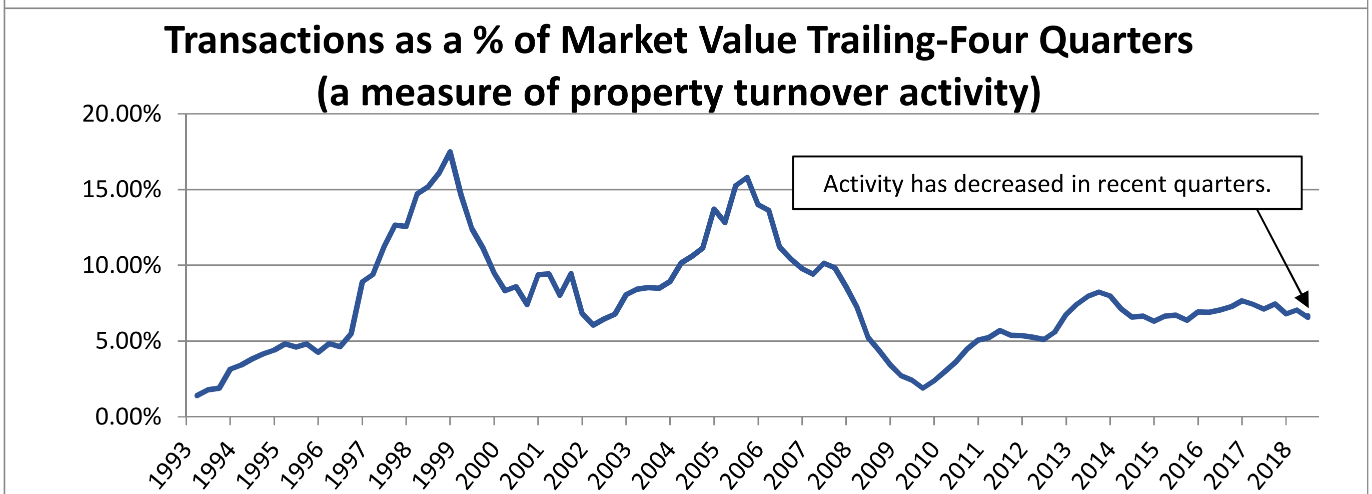
Quarterly Data, Updated to September 30th.



Sources: NCRIEF, www.ustreas.gov

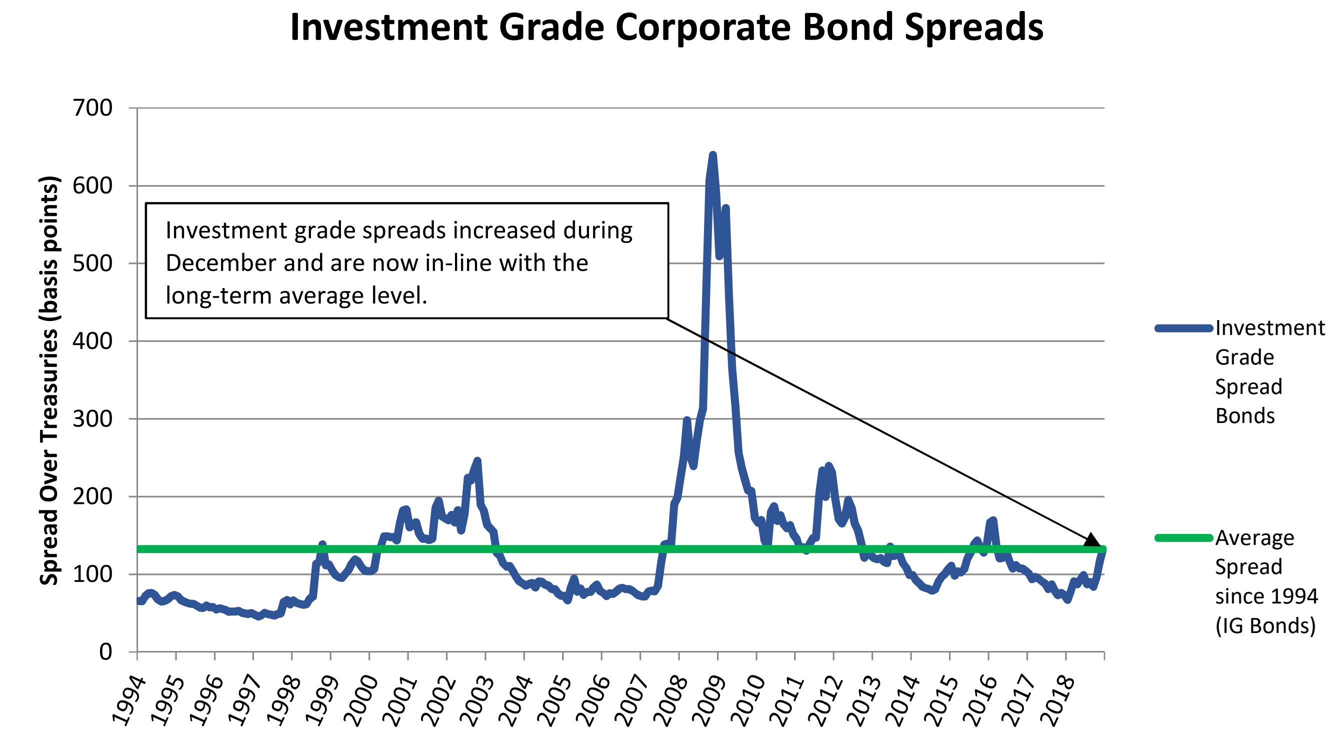
[1]A cap rate is the current annual income of the property divided by an estimate of the current value of the property . It is the current yield of the property. Low cap rates indicate high valuations.



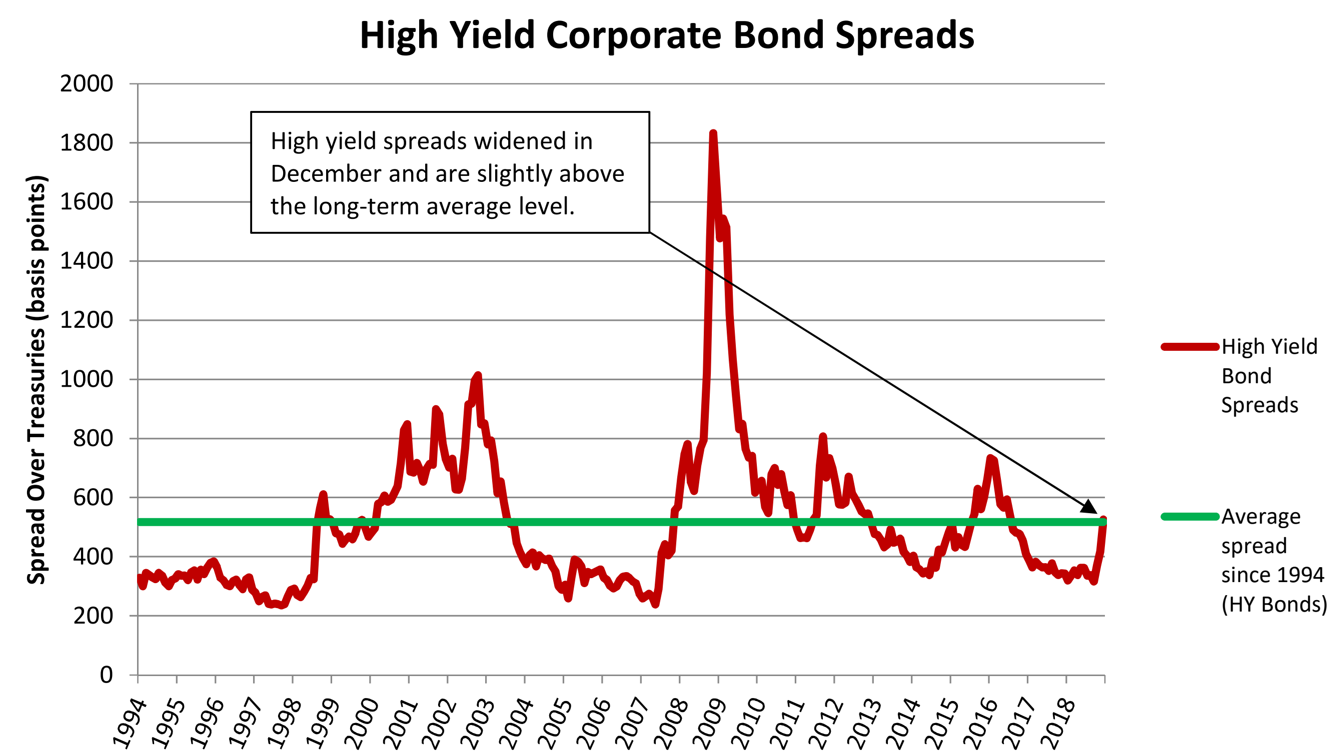


Source: NCREIF, PCA calculation

Credit Market US Fixed Income

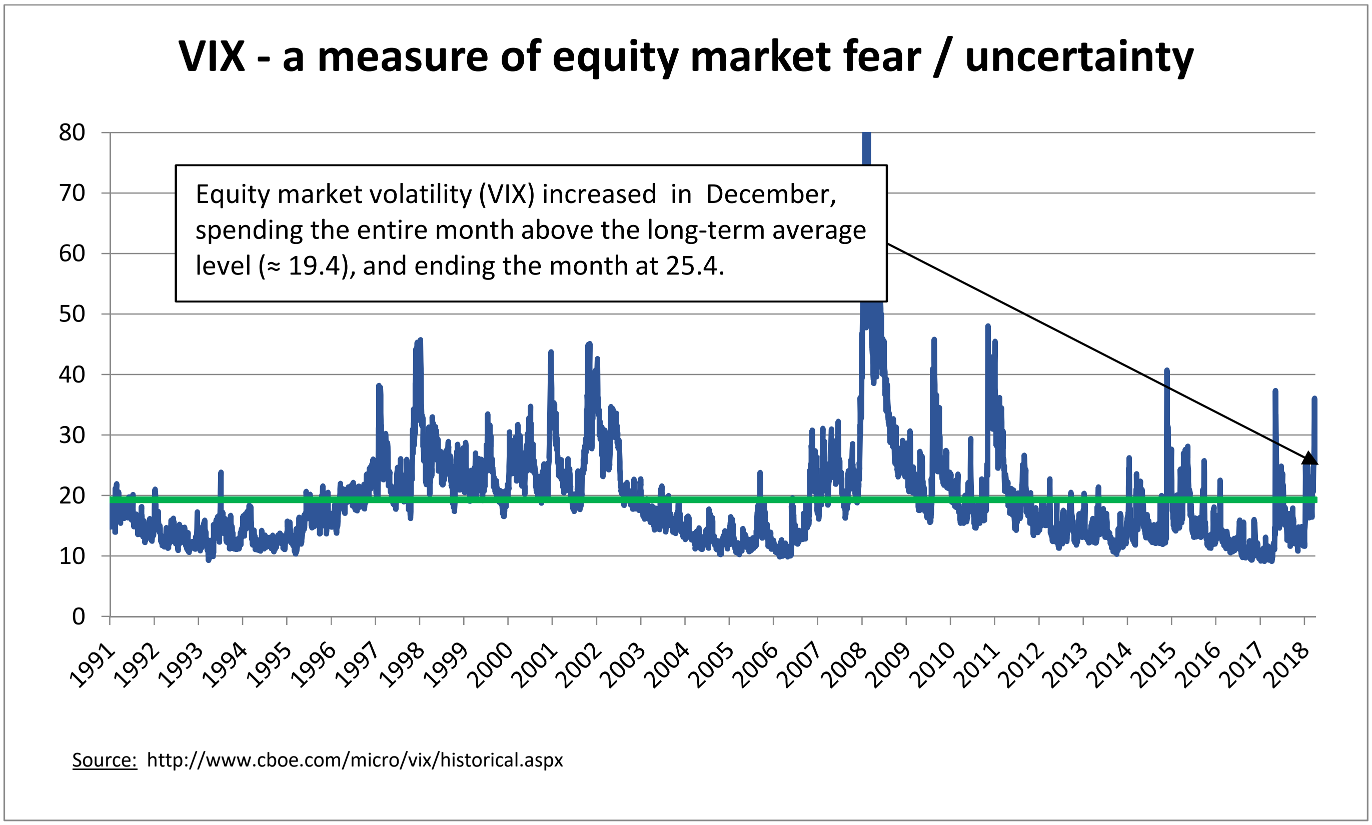


Source: LehmanLive: Barclays Capital US Corporate Investment Grade Index Intermediate Component.



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

Other Market Metrics



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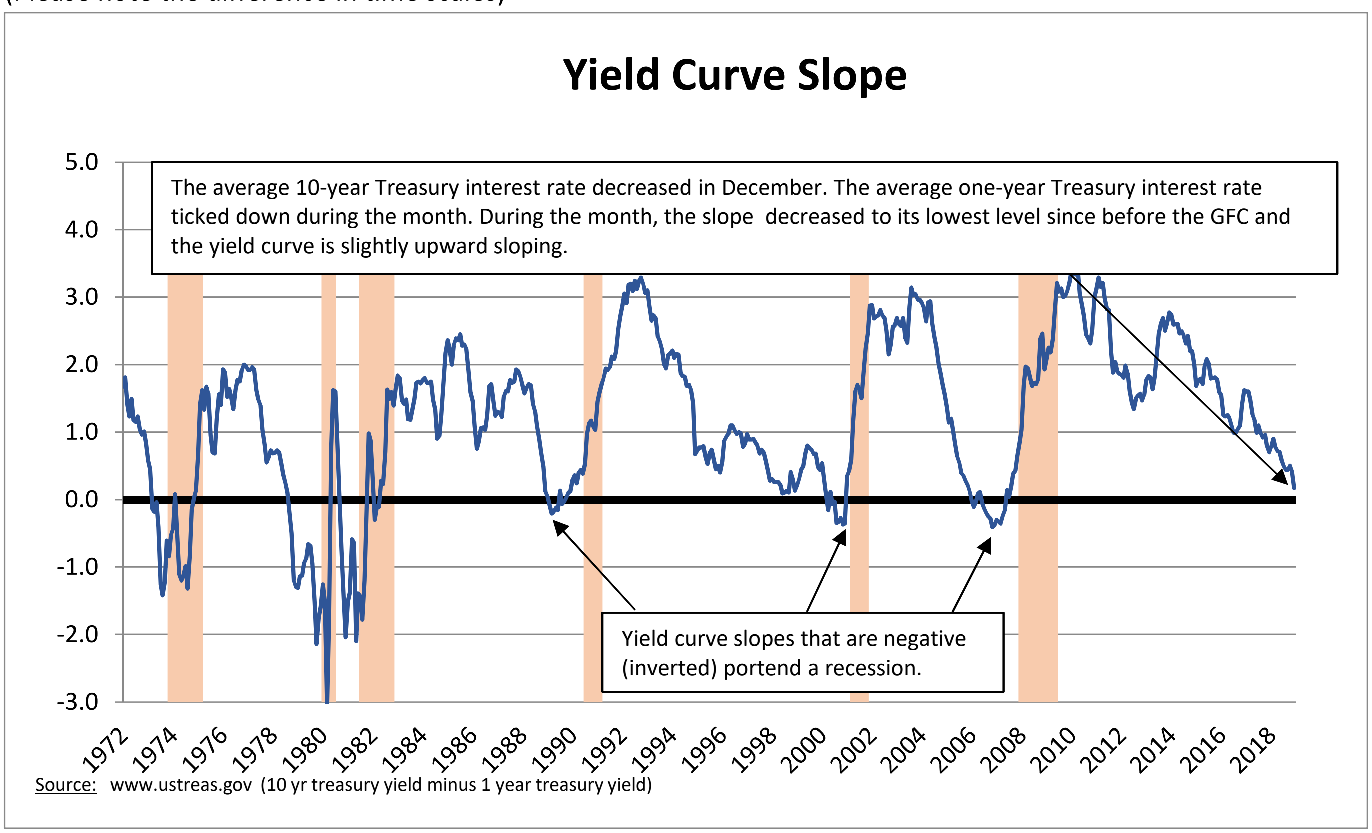
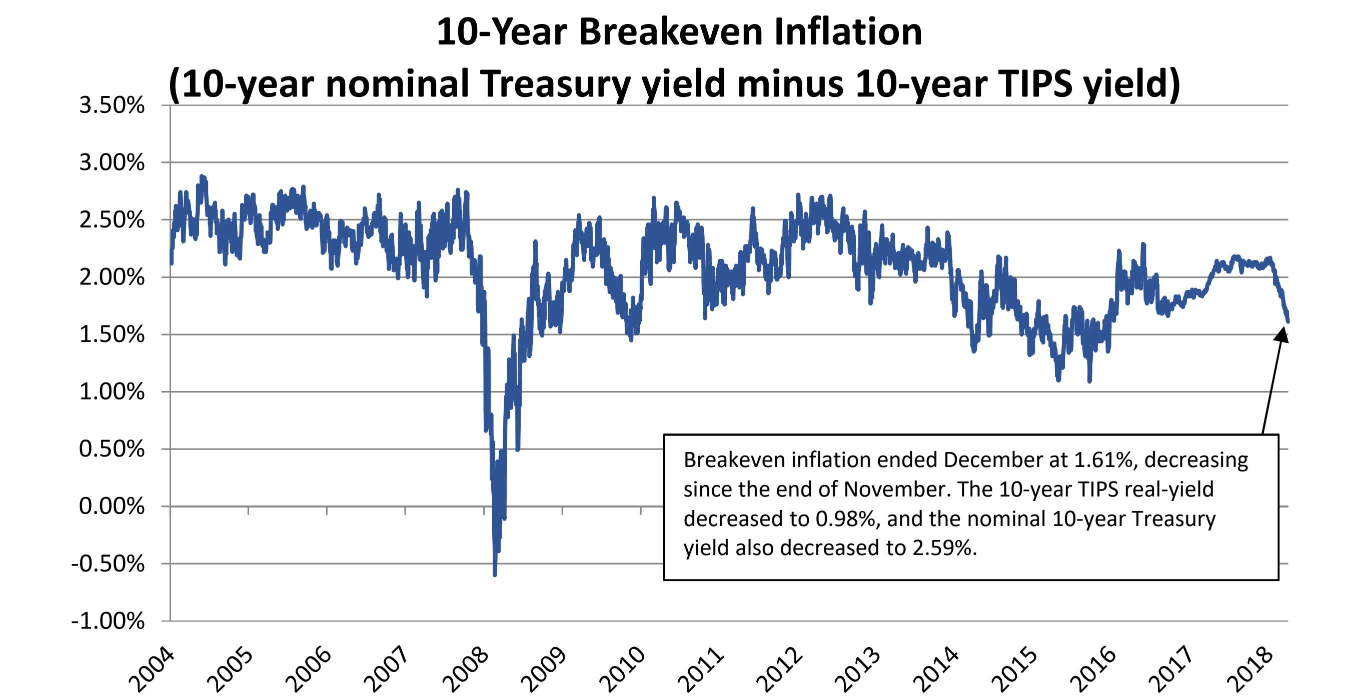
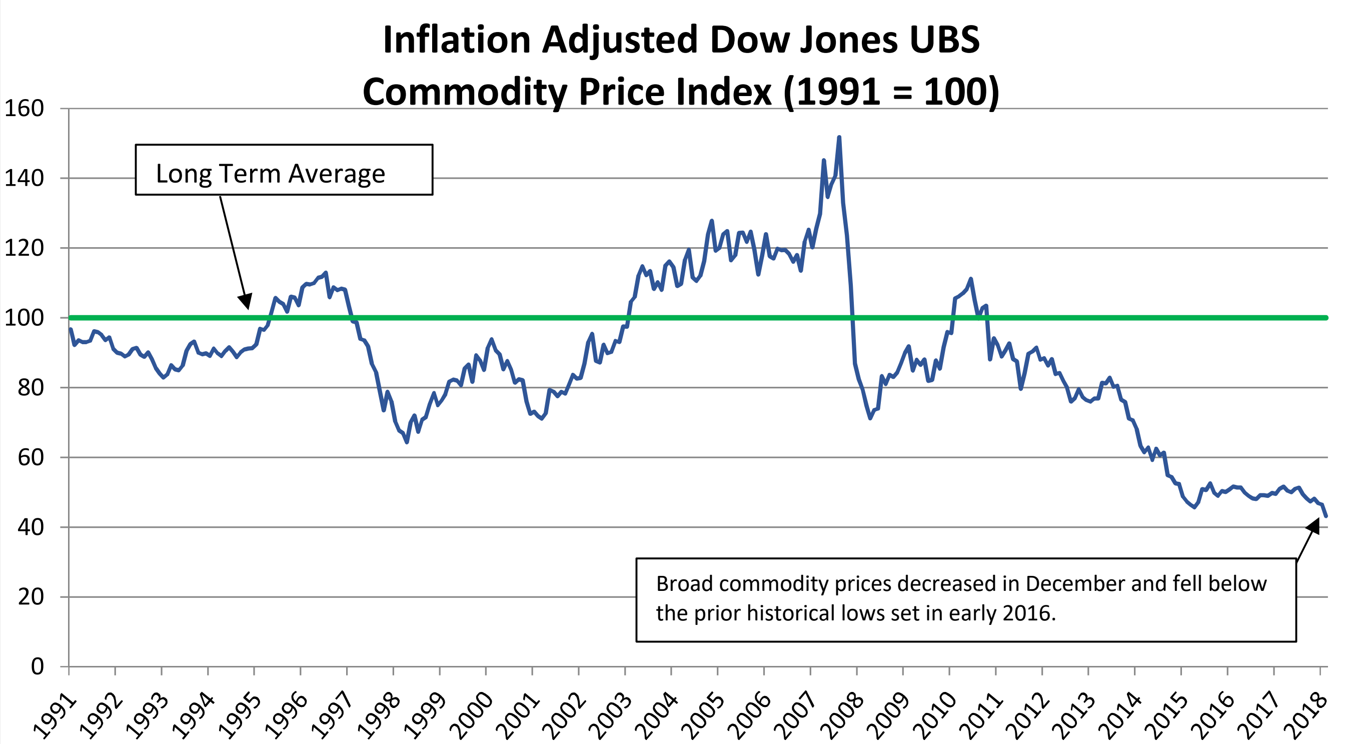


Measures of Inflation Expectations



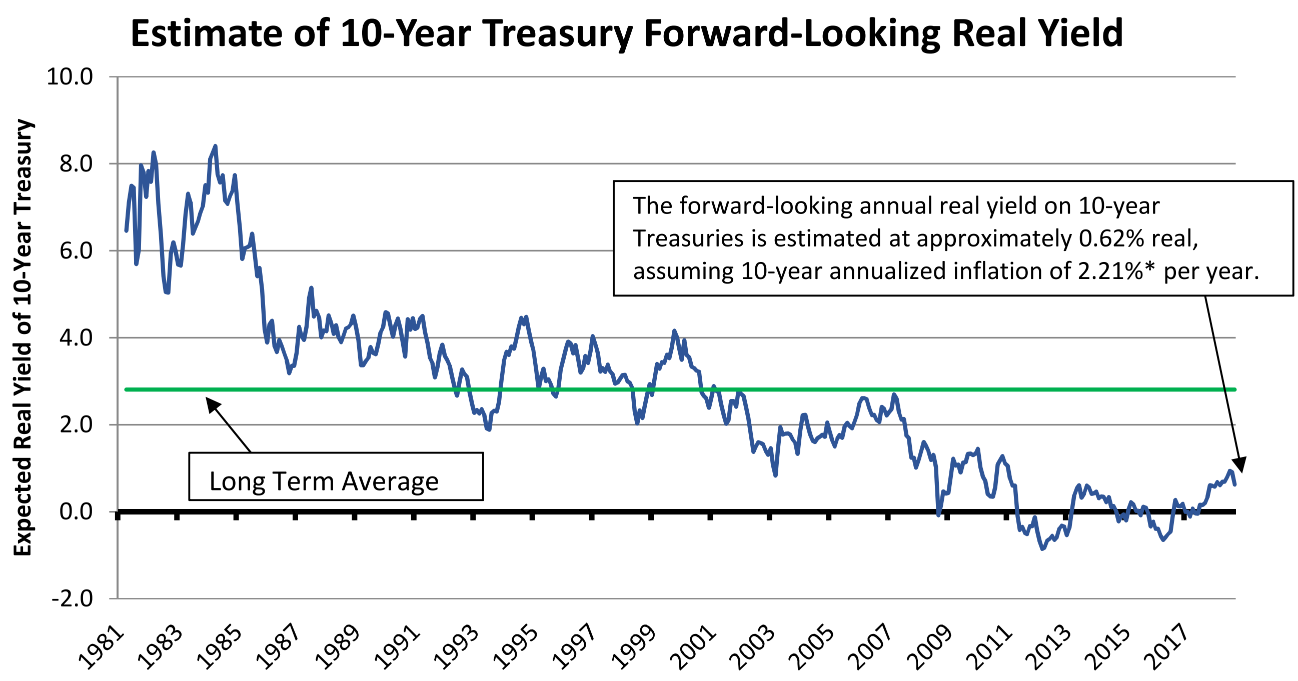
Source: www.ustreas.gov

(Please note the difference in time scales)

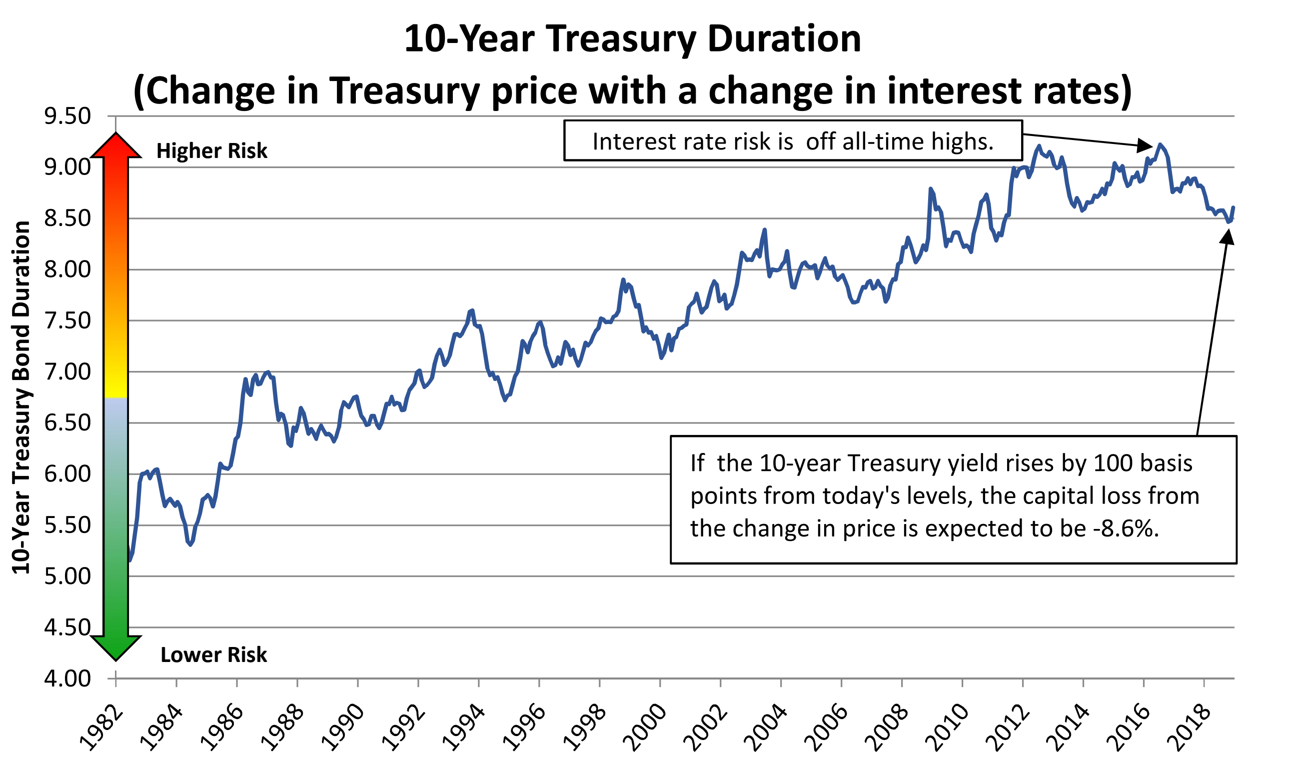


Source: Bloomberg Commodity Index, St. Louis Fed for US CPI all urban consumers.

Measures of U.S. Treasury Interest Rate Risk



Sources: www.ustreas.gov for 10-year constant maturity rates
*Federal Reserve Bank of Philadelphia survey of professional forecasts for inflation estimates



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

Appendix

Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

US Equity Markets:

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

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

Developed Equity Markets Excluding the US:

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

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

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

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

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

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

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

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

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

U.S Private Real Estate Markets:
Metrics: US Cap Rates, Cap Rate Spreads, and Transactions as a % of Market Value

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

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

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

Credit Markets US Fixed Income:
Metric: Spreads

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

Appendix

METRIC DESCRIPTION, RATIONALE FOR SELECTION AND CALCULATION METHODOLOGY

Measure of Equity Market Fear / Uncertainty
Metric: VIX – Measure of implied option volatility for U.S. equity markets

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

Measure of Monetary Policy
Metric: Yield Curve Slope

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

Measures of US Inflation Expectations
Metrics: Breakeven Inflation and Inflation Adjusted Commodity Prices

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

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

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

Measures of US Treasury Bond Interest Rate Risk
Metrics: 10-Year Treasury Forward-Looking Real Yield and 10-Year Treasury Duration

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

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

Definition of "extreme" metric readings

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

PCA Market Sentiment Indicator

Explanation, Construction and Q&A

By:

Pension Consulting Alliance, LLC.

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

This paper explores:

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

PCA Market Sentiment Indicator

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

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

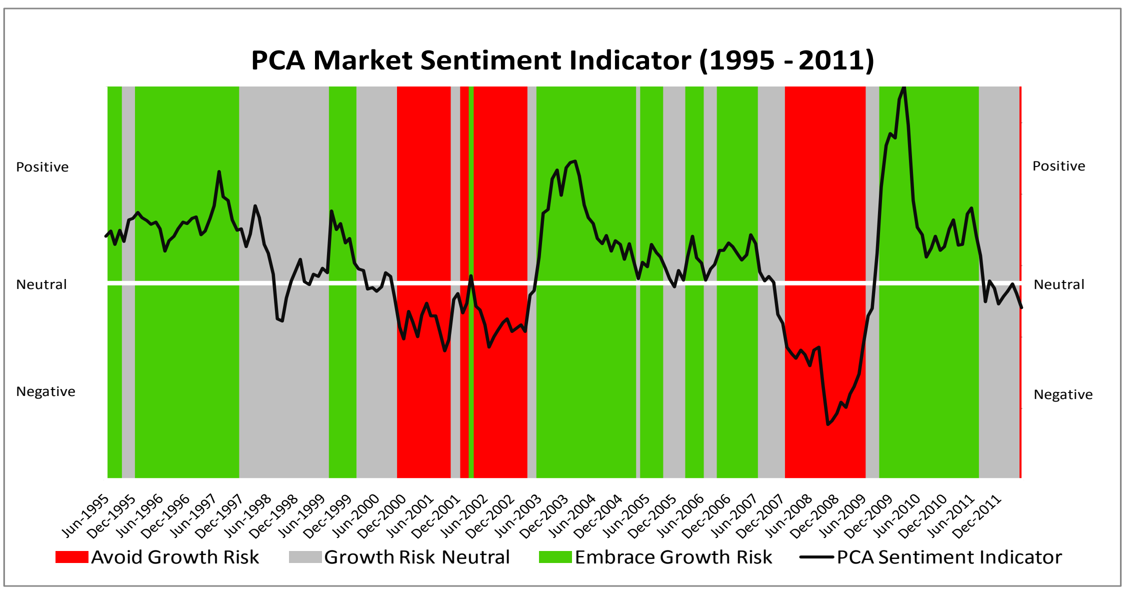
What is the PCA Market Sentiment Indicator (PMSI)?

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

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

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

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



PCA PENSION CONSULTING ALLIANCE

PCA Market Sentiment Indicator

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

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

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

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

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

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

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

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

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

TAB J

Report

Comprehensive Performance Report

December 31, 2018

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Comprehensive Performance Report

December 31, 2018

Description of SBI Investment Programs

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

Combined Funds

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

Participant Directed Investment Program

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

Non-Retirement

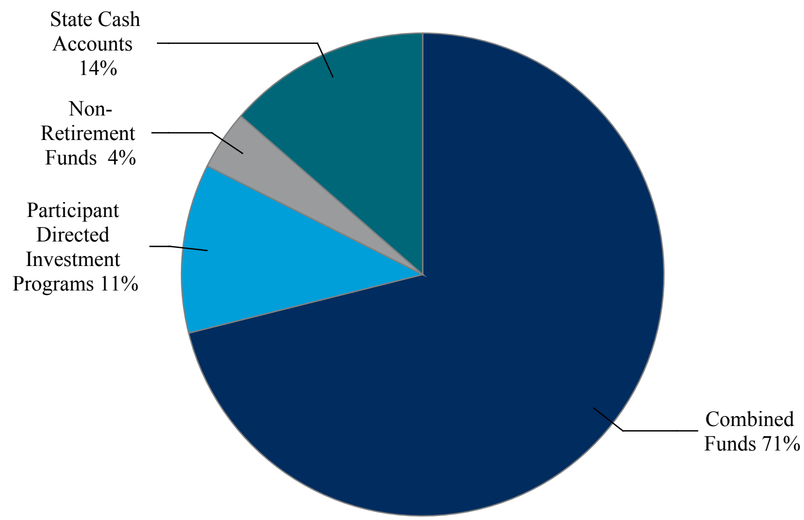
The Non-Retirement Funds are funds established by the State of Minnesota and other government entities for various purposes which include the benefit of public schools, the environment, other post-employment benefits, workers compensation insurance, and other purposes.

State Cash

The State Cash accounts are cash balances of state government funds including the State General Fund. Most accounts are invested by SBI staff through a short-term pooled fund referred to as the Treasurer's Cash Pool. It contains the cash balances of special or dedicated accounts necessary for the operation of certain State agencies and non-dedicated cash in the State Treasury. Because of special legal restrictions, a small number of cash accounts cannot be commingled.

Funds Under Management

	$ Millions
COMBINED FUNDS	
Combined Funds	$64,107
PARTICIPANT DIRECTED INVESTMENT PROGRAMS	
Supplemental Investment Fund*	3,660
State Deferred Compensation Plan**	5,201
Minnesota College Savings Plan	1,349
Achieve a Better Life Experience	4
NON-RETIREMENT FUNDS	
Assigned Risk Plan	271
Permanent School Fund	1,348
Environmental Trust Fund	1,064
Closed Landfill Investment Fund	84
Miscellaneous	226
Ohter Post Employment Benefits Accounts	596
STATE CASH ACCOUNTS	
Treasurer's Cash	12,007
Other State Cash Accounts	249
TOTAL	
SBI AUM	90,167



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

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

Note: Differentials within column amounts may occur due to rounding

Quarterly Report

Table of Contents

Performance Reporting Legend

Manager Level Data
Aggregate Level Data
Sub-Asset Class Level Data
Asset Class Level Data

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

STATE STREET

Combined Funds

December 31, 2018

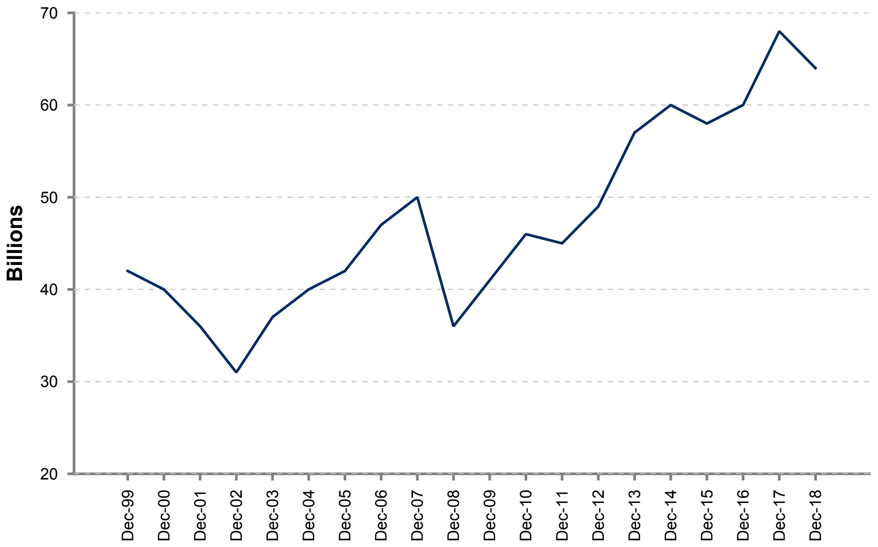
Combined Funds Summary

Combined Funds Change in Market Value ($Millions)

	One Quarter
COMBINED FUNDS	
Beginning Market Value	$70,023
Net Contributions	-554
Investment Return	-5,361
Ending Market Value	64,107

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

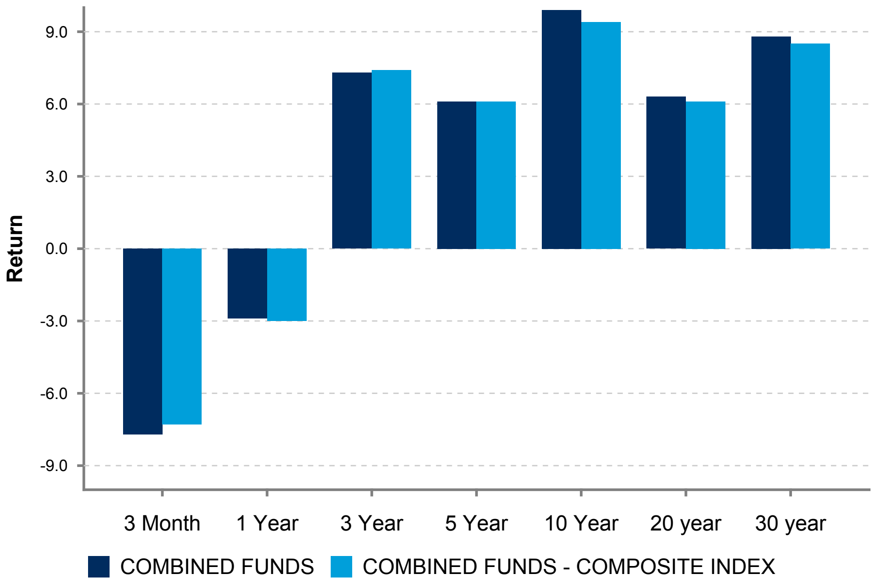
Asset Growth



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	-7.7%	-4.5%	-2.9%	7.3%	6.1%	9.9%	6.3%	8.8%
COMBINED FUNDS - COMPOSITE INDEX	-7.3	-4.1	-3.0	7.4	6.1	9.4	6.1	8.5
Excess	-0.4	-0.4	0.1	-0.0	-0.0	0.5	0.2	0.3

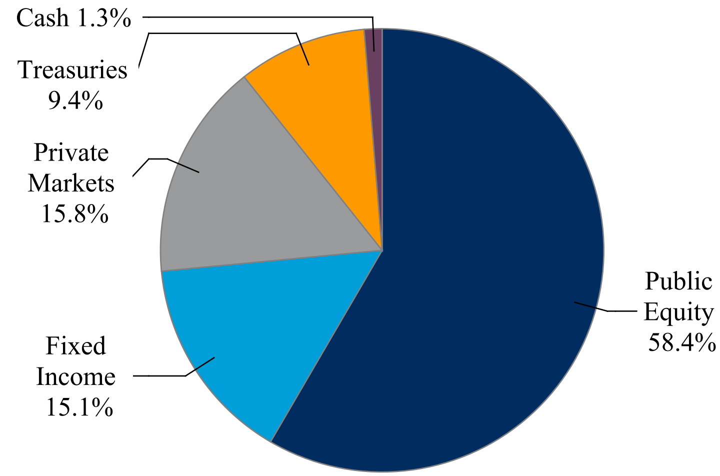


Combined Funds Summary

Asset Mix

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

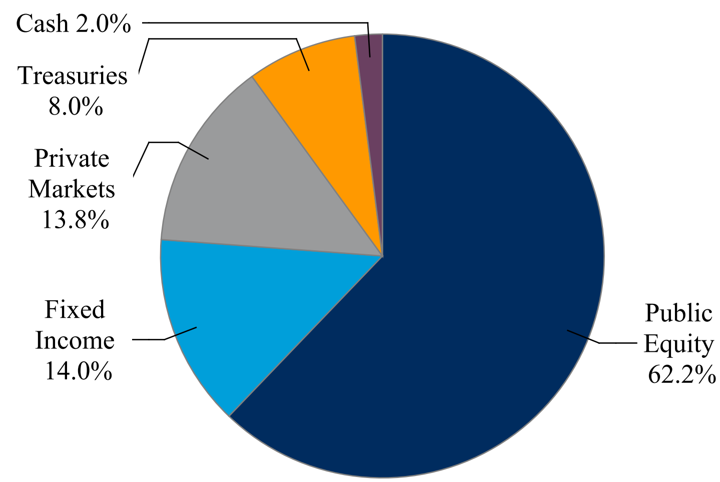
	(Millions)	Actual Mix	Transitional Policy Target
Public Equity	$37,434	58.4%	51.0%
Fixed Income	9,682	15.1	14.0
Private Markets	10,142	15.8	25.0
Treasuries	6,002	9.4	8.0
Cash	846	1.3	2.0
TOTAL	64,107	100.0	



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	62.2%	67% Russell 3000/33% MSCI ACWI ex US
Fixed Income	14.0	BB Barclays U.S. Aggregate
Private Markets	13.9	Private Markets
Treasuries	8.0	BB Barclays Treasury 5+ Years
Cash	2.0	3 Month T-Bills



Combined Funds Asset Class Performance Summary

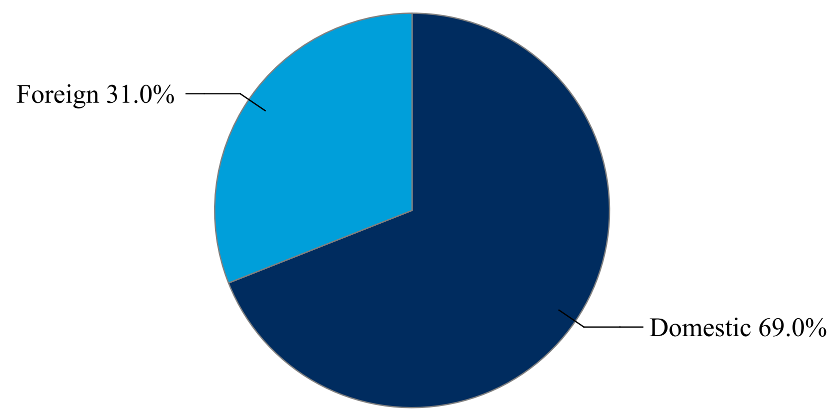
Public Equity

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

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

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

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



	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Public Equity	-13.9%	-9.6%	-8.4%	7.3%	5.8%	11.7%	5.4%	9.1%
Public Equity Benchmark	-13.3	-9.0	-8.2					
Excess	-0.6	-0.6	-0.2					
Domestic Equity	-14.8	-8.8	-5.3	8.6	7.6	13.2	5.6	9.5
Domestic Equity Benchmark	-14.3	-8.2	-5.2	9.0	7.9	13.2	5.8	9.7
Excess	-0.5	-0.6	-0.0	-0.3	-0.3	0.0	-0.2	-0.2
International Equity	-11.8	-11.4	-14.5	3.8	0.9	7.0	4.6	
International Equity Benchmark	-11.5	-10.8	-14.2	4.5	0.7	6.6	4.2	
Excess	-0.4	-0.6	-0.3	-0.6	0.2	0.4	0.4	

Note:

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

Combined Funds Asset Class Performance Summary

Fixed Income

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

The Core Fixed Income benchmark is the Bloomberg Barclays U.S. Aggregate Index. This index reflects the performance of the broad bond market for investment grade (Baa or higher) bonds, U.S. Treasury and agency securities, and mortgage obligations with maturities greater than one year.

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

	Last Qtr	FYTD	1 Year	3 Year	5 Year	10 Year	20 Year	30 year
Fixed Income	1.1%	1.4%	-0.0%	2.6%	2.9%	4.9%	4.9%	6.4%
Fixed Income Benchmark	1.6	1.7	0.0	2.1	2.5	3.5	4.5	6.1
Excess	-0.5	-0.3	-0.0	0.5	0.4	1.5	0.4	0.3
Treasuries	3.6	2.1						
BBG BARC 5Y + Us Tsy Idx	3.7	2.2						
Excess	-0.1	-0.1						

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	0.5%	1.1%	1.9%	1.2%	0.8%	0.7%	2.3%	3.9%
90 DAY T-BILL	0.6	1.1	1.9	1.0	0.6	0.4	1.9	3.2

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	3.7%	8.0%	15.7%	13.8%	12.0%	10.3%	13.1%	13.6%	12.2%
Private Equity	3.8%	8.9%	17.8%	17.1%	15.7%	13.5%	14.2%	15.4%	
Private Credit	2.3	6.8	13.4	14.6	14.2	12.3	12.8		
Resources	4.7	7.6	12.8	5.6	1.0	4.1	15.2	14.9	
Real Estate	2.4	5.1	11.5	9.6	12.2	5.6	9.0	9.4	

Private Markets

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

Private Equity Investments

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

Private Credit Investments

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

Resource Investments

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

Real Estate Investments

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

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

STATE STREET.

Asset Class & Manager Performance
December 31, 2018

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

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

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

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

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Domestic Equity
December 31, 2018

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)	**$4,146,153,402**	**15.4%**	**-18.6%**	**-14.2%**	**-6.5%**	**7.7%**	**6.3%**	**13.0%**		
Active Domestic Equity Benchmark			-17.0	-12.4	-8.0	8.0	6.8	12.7		
Excess			-1.7	-1.8	1.4	-0.3	-0.4	0.3		
SEMI PASSIVE DOMESTIC EQUITY AGGREGATE (2)	**2,090,562,399**	**7.8**	**-14.1**	**-7.4**	**-4.9**	**9.0**	**8.2**	**13.4**		
Semi Passive Domestic Equity Benchmark			-13.8	-7.4	-4.8	9.1	8.2	13.3		
Excess			-0.2	-0.0	-0.1	-0.1	0.0	0.1		
PASSIVE DOMESTIC EQUITY AGGREGATE (3)	**20,663,693,059**	**76.8**	**-14.0**	**-7.8**	**-5.0**	**9.1**	**8.0**	**13.2**		
Passive Domestic Equity Benchmark			-14.0	-7.8	-5.0	9.1	8.0	13.2		
Excess			-0.0	-0.0	-0.0	-0.0	-0.0	-0.0		
TRANSITION AGGREGATE DOMESTIC EQUITY (4)	51,962	0.0								
TOTAL DOMESTIC EQUITY (5)	**26,900,460,821**	**100.0**	**-14.8**	**-8.8**	**-5.3**	**8.6**	**7.6**	**13.2**	**10.0**	**01/1984**
Domestic Equity Benchmark			-14.3	-8.2	-5.2	9.0	7.9	13.2	10.2	01/1984
Excess			-0.5	-0.6	-0.0	-0.3	-0.3	0.0	-0.2	

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

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

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

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

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

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

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

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

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

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

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

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

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

	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	**$527,780,488**	**2.0%**	**-17.5%**	**-11.8%**	**7.0%**	**10.5%**	**8.7%**	**19.6%**	**10.1%**	**01/2005**
Russell 1000 Growth			-15.9	-8.2	-1.5	11.1	10.4	15.3	8.9	01/2005
Excess			-1.6	-3.6	8.6	-0.6	-1.8	4.3	1.3	
WINSLOW	**218,996,486**	**0.8**	**-15.9**	**-8.8**	**4.2**	**10.8**	**10.0**	**15.3**	**9.7**	**01/2005**
Russell 1000 Growth			-15.9	-8.2	-1.5	11.1	10.4	15.3	8.9	01/2005
Excess			0.0	-0.7	5.7	-0.3	-0.4	-0.0	0.9	
ZEVENBERGEN	**466,029,284**	**1.7**	**-23.8**	**-17.8**	**2.3**	**10.3**	**8.1**	**16.1**	**10.1**	**04/1994**
Russell 1000 Growth			-15.9	-8.2	-1.5	11.1	10.4	15.3	9.2	04/1994
Excess			-7.9	-9.6	3.8	-0.8	-2.3	0.9	0.9	
RUSSELL 1000 GROWTH AGGREGATE	**1,212,806,258**	**4.5**	**-19.8**	**-13.7**	**4.7**	**12.2**	**10.1**	**16.4**		
Russell 1000 Growth			-15.9	-8.2	-1.5	11.1	10.4	15.3		
Excess			-3.9	-5.6	6.2	1.0	-0.3	1.1		

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

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	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	**$359,515,904**	**1.3%**	**-12.5%**	**-6.0%**	**-5.9%**	**6.8%**	**6.1%**	**11.3%**	**7.3%**	**04/2004**
Russell 1000 Value			-11.7	-6.7	-8.3	7.0	5.9	11.2	6.9	04/2004
Excess			-0.7	0.7	2.4	-0.2	0.2	0.1	0.4	
EARNEST PARTNERS	**252,206,379**	**0.9**	**-13.6**	**-7.6**	**-7.7**	**8.7**	**7.3**	**12.0**	**6.4**	**07/2000**
Russell 1000 Value			-11.7	-6.7	-8.3	7.0	5.9	11.2	6.5	07/2000
Excess			-1.9	-0.9	0.6	1.8	1.4	0.8	-0.2	
LSV	**338,243,317**	**1.3**	**-14.5**	**-10.5**	**-11.8**	**6.9**	**6.4**	**12.5**	**8.0**	**04/2004**
Russell 1000 Value			-11.7	-6.7	-8.3	7.0	5.9	11.2	6.9	04/2004
Excess			-2.7	-3.8	-3.6	-0.0	0.4	1.3	1.1	
RUSSELL 1000 VALUE AGGREGATE	**949,965,600**	**3.5**	**-13.5**	**-8.1**	**-8.7**	**7.3**	**6.2**	**11.6**		
Russell 1000 Value			-11.7	-6.7	-8.3	7.0	5.9	11.2		
Excess			-1.8	-1.5	-0.4	0.3	0.3	0.5		

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

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	**$944,839,363**	**3.5%**	**-14.3%**	**-7.5%**	**-4.1%**	**10.4%**	**9.1%**	**13.8%**	**9.4%**	**01/1995**
Semi Passive Domestic Equity Benchmark			-13.8	-7.4	-4.8	9.1	8.2	13.3	9.0	01/1995
Excess			-0.5	-0.0	0.7	1.3	0.9	0.5	0.4	
J.P. MORGAN	**1,145,723,036**	**4.3**	**-13.9**	**-7.4**	**-5.4**	**9.0**	**8.4**	**13.9**	**9.3**	**01/1995**
Semi Passive Domestic Equity Benchmark			-13.8	-7.4	-4.8	9.1	8.2	13.3	9.0	01/1995
Excess			-0.0	0.1	-0.6	-0.1	0.2	0.6	0.3	
SEMI-PASSIVE DOMESTIC EQUITY AGGREGATE	**2,090,562,399**	**7.8**	**-14.1**	**-7.4**	**-4.9**	**9.0**	**8.2**	**13.4**		
Semi Passive Domestic Equity Benchmark			-13.8	-7.4	-4.8	9.1	8.2	13.3		
Excess			-0.2	-0.0	-0.1	-0.1	0.0	0.1		

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

	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	**$209,145,771**	**0.8%**	**-17.7%**	**-11.2%**	**0.9%**				**16.4%**	**11/2016**
Russell 2000 Growth			-21.7	-17.3	-9.3				9.8	11/2016
Excess			3.9	6.1	10.3				6.6	
HOOD RIVER	**214,634,022**	**0.8**	**-24.3**	**-15.4**	**-7.0**				**9.8**	**11/2016**
Russell 2000 Growth			-21.7	-17.3	-9.3				9.8	11/2016
Excess			-2.6	2.0	2.3				0.0	
RICE HALL JAMES	**200,929,264**	**0.7**	**-22.2**	**-18.3**	**-6.9**				**14.3**	**11/2016**
Russell 2000 Growth			-21.7	-17.3	-9.3				9.8	11/2016
Excess			-0.6	-1.0	2.4				4.5	
WELLINGTON	**209,966,127**	**0.8**	**-22.2**	**-18.7**	**-11.6**				**8.7**	**11/2016**
Russell 2000 Growth			-21.7	-17.3	-9.3				9.8	11/2016
Excess			-0.6	-1.3	-2.3				-1.1	
RUSSELL 2000 GROWTH AGGREGATE	**834,675,184**	**3.1**	**-21.7**	**-16.0**	**-6.2**	**6.2**	**3.2**	**12.1**		
Russell 2000 Growth			-21.7	-17.3	-9.3	7.2	5.1	13.5		
Excess			-0.1	1.4	3.2	-1.0	-1.9	-1.4		

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	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return	2013 Calendar Return
Active Small Cap Growth					
ARROWMARK	**26.2%**				
Russell 2000 Growth	22.2				
Excess	4.1				
HOOD RIVER	**21.3**				
Russell 2000 Growth	22.2				
Excess	-0.9				
RICE HALL JAMES	**27.9**				
Russell 2000 Growth	22.2				
Excess	5.8				
WELLINGTON	**22.6**				
Russell 2000 Growth	22.2				
Excess	0.4				
RUSSELL 2000 GROWTH AGGREGATE	**22.0%**	**4.7**	**1.0**	**-3.4**	**47.2**
Russell 2000 Growth	22.2%	11.3	-1.4	5.6	43.3
Excess	-0.1%	-6.6	2.4	-9.0	3.9

	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	**$315,829,966**	**1.2%**	**-17.6%**	**-14.9%**	**-13.3%**	**6.7%**	**4.3%**	**12.7%**	**8.5%**	**01/2004**
Russell 2000 Value			-18.7	-17.4	-12.9	7.4	3.6	10.4	6.9	01/2004
Excess			1.1	2.5	-0.5	-0.6	0.7	2.3	1.5	
HOTCHKIS AND WILEY	**264,507,145**	**1.0**	**-20.7**	**-18.9**	**-14.4**	**3.5**	**2.7**	**15.7**	**7.2**	**01/2004**
Russell 2000 Value			-18.7	-17.4	-12.9	7.4	3.6	10.4	6.9	01/2004
Excess			-2.0	-1.6	-1.5	-3.9	-0.9	5.3	0.3	
MARTINGALE	**252,740,872**	**0.9**	**-18.8**	**-18.3**	**-15.0**	**6.9**	**4.4**	**11.9**	**6.9**	**01/2004**
Russell 2000 Value			-18.7	-17.4	-12.9	7.4	3.6	10.4	6.9	01/2004
Excess			-0.2	-1.0	-2.1	-0.5	0.8	1.5	-0.1	
PEREGRINE	**315,628,377**	**1.2**	**-19.9**	**-19.9**	**-16.1**	**6.4**	**3.2**	**13.0**	**9.2**	**07/2000**
Russell 2000 Value			-18.7	-17.4	-12.9	7.4	3.6	10.4	8.7	07/2000
Excess			-1.3	-2.6	-3.3	-0.9	-0.4	2.6	0.5	
RUSSELL 2000 VALUE AGGREGATE	**1,148,706,360**	**4.3**	**-19.2**	**-18.0**	**-14.7**	**5.9**	**3.6**	**13.1**		
Russell 2000 Value			-18.7	-17.4	-12.9	7.4	3.6	10.4		
Excess			-0.6	-0.7	-1.8	-1.4	0.0	2.7		

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

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	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	**$18,791,544,283**	**69.9%**	**-13.8%**	**-7.4%**	**-4.8%**				**9.9%**	**11/2016**
Russell 1000			-13.8	-7.4	-4.8				9.9	11/2016
Excess			-0.0	-0.0	-0.0				-0.0	
BLACKROCK RUSSELL 2000	**508,848,061**								**-10.3**	**11/2018**
RUSSELL 2000 (DAILY)									-10.5	11/2018
Excess									0.2	
BLACKROCK RUSSELL 3000 (1)	**1,363,300,714**	**5.1**	**-14.3**	**-8.2**	**-5.2**	**9.0%**	**7.9%**	**13.2%**	**8.7**	**07/1995**
Passive Manager Benchmark			-14.3	-8.2	-5.2	9.0	7.9	13.2	8.6	07/1995
PASSIVE DOMESTIC EQUITY AGGREGATE	**20,663,693,059**	**76.8**	**-14.0**	**-7.8**	**-5.0**	**9.1**	**8.0**	**13.2**		
Passive Domestic Equity Benchmark			-14.0	-7.8	-5.0	9.1	8.0	13.2		
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.

	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return	2013 Calendar Return
Total Passive Domestic Equity					
BLACKROCK RUSSELL 1000	**21.7%**				
Russell 1000	21.7				
Excess	-0.0				
BLACKROCK RUSSELL 2000					
RUSSELL 2000 (DAILY)					
Excess					
BLACKROCK RUSSELL 3000 (1)	**21.1**	**12.7%**	**0.5%**	**12.6%**	**33.5%**
Passive Manager Benchmark	21.1	12.7	0.5	12.6	33.6
PASSIVE DOMESTIC EQUITY AGGREGATE	**21.3%**	**12.6**	**0.5**	**12.6**	**33.5**
Passive Domestic Equity Benchmark	21.5%	12.5	0.5	12.6	33.6
Excess	-0.2%	0.1	0.0	0.0	-0.0

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

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International Equity
December 31, 2018

	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)	**$8,854,984,600**	**75.1%**	**-13.2%**	**-12.2%**	**-14.2%**	**2.8%**	**0.8%**	**6.9%**		
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2		
Excess			-0.5	-0.6	-0.1	-0.3	0.4	0.7		
EMERGING MARKETS (2)	**2,936,461,411**	**24.9**	**-7.2**	**-8.8**	**-15.4**	**7.8**	**0.9**	**7.4**		
BENCHMARK EM			-7.5	-8.5	-14.6	9.2	1.6	8.0		
Excess			0.3	-0.3	-0.8	-1.4	-0.7	-0.7		
TRANSITION AGGREGATE INTERNATIONAL EQUITY (3)	3,444,142	0.0								
TOTAL INTERNATIONAL EQUITY (4)	**11,794,890,153**	**100.0**	**-11.8**	**-11.4**	**-14.5**	**3.8**	**0.9**	**7.0**	**6.0**	**10/1992**
International Equity Benchmark			-11.5	-10.8	-14.2	4.5	0.7	6.6	5.6	10/1992
Excess			-0.4	-0.6	-0.3	-0.7	0.2	0.4	0.4	

(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 the Standard (large + mid) MSCI ACWI ex U.S. (net).

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

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

(1) The current 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 the Standard (large + mid) MSCI ACWI ex U.S. (net).

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

	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	**$344,033,825**	**2.9%**	**-14.6%**	**-13.9%**	**-13.5%**	**8.6%**	**5.2%**	**9.3%**	**5.7%**	**07/2005**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	4.0	07/2005
Excess			-1.8	-2.3	0.6	5.5	4.9	3.1	1.8	
COLUMBIA	**299,087,192**	**2.5**	**-14.4**	**-13.9**	**-14.9**	**2.2**	**1.4**	**7.6**	**2.2**	**03/2000**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	2.7	03/2000
Excess			-1.6	-2.2	-0.8	-0.9	1.1	1.3	-0.5	
FIDELITY	**327,729,065**	**2.8**	**-14.3**	**-13.3**	**-14.6**	**2.9**	**0.6**	**7.6**	**5.3**	**07/2005**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	4.0	07/2005
Excess			-1.5	-1.6	-0.5	-0.2	0.2	1.4	1.4	
JP MORGAN	**222,713,630**	**1.9**	**-13.7**	**-14.2**	**-17.3**	**3.3**	**-0.0**	**6.5**	**3.9**	**07/2005**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	4.0	07/2005
Excess			-0.9	-2.6	-3.3	0.2	-0.4	0.2	-0.1	
MARATHON	**402,617,842**	**3.4**	**-13.6**	**-12.7**	**-13.4**	**1.8**	**1.5**	**8.2**	**7.5**	**11/1993**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	4.5	11/1993
Excess			-0.9	-1.1	0.7	-1.3	1.2	2.0	3.0	
MCKINLEY	**224,333,235**	**1.9**	**-16.5**	**-15.8**	**-15.9**	**-0.0**	**0.1**	**5.8**	**3.6**	**07/2005**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	4.0	07/2005
Excess			-3.7	-4.2	-1.9	-3.1	-0.3	-0.4	-0.4	
ACTIVE DEVELOPED MARKETS AGGREGATE	**1,820,514,789**	**15.4**	**-14.4**	**-13.7**	**-14.5**	**3.1**	**1.6**	**7.6**		
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2		
Excess			-1.6	-2.1	-0.4	-0.0	1.3	1.4		

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

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	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	**$301,715,494**	**2.6%**	**-14.3%**	**-14.0%**	**-18.2%**	**1.0%**	**-0.1%**	**6.9%**	**4.2%**	**07/2005**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	4.0	07/2005
Excess			-1.5	-2.3	-4.1	-2.1	-0.5	0.6	0.2	
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**301,715,494**	**2.6**	**-14.3**	**-14.0**	**-18.7**	**-0.0**	**-1.0**	**6.0**		
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2		
Excess			-1.5	-2.3	-4.6	-3.1	-1.3	-0.2		

	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return	2013 Calendar Return
Semi-Passive Developed Markets					
AQR	**25.1%**	**0.8%**	**0.9%**	**-4.4%**	**24.1%**
BENCHMARK DM	24.2	2.7	-3.0	-4.3	21.0
Excess	0.9	-2.0	3.9	-0.1	3.1
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**23.3%**	**-0.4**	**-0.3**	**-4.4**	**24.0**
BENCHMARK DM	24.2%	2.7	-3.0	-4.3	21.0
Excess	-0.9%	-3.1	2.7	-0.1	3.0

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	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	**$1,820,514,789**	**15.4%**	**-14.4%**	**-13.7%**	**-14.5%**	**3.1%**	**1.6%**	**7.6%**		
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2		
Excess			-1.6	-2.1	-0.4	-0.0	1.3	1.4		
SEMI-PASSIVE DEVELOPED MARKETS AGGREGATE	**301,715,494**	**2.6**	**-14.3**	**-14.0**	**-18.7**	**-0.0**	**-1.0**	**6.0**		
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2		
Excess			-1.5	-2.3	-4.6	-3.1	-1.3	-0.2		
SSgA DEVELOPED MARKETS PASSIVE	**6,732,754,317**	**57.1**	**-12.8**	**-11.7**	**-13.9**	**3.5**	**0.7**	**6.7**	**5.7**	**10/1992**
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2	5.4	10/1992
Excess			-0.1	-0.0	0.2	0.3	0.4	0.4	0.3	
DEVELOPED MARKETS TOTAL	**8,854,984,600**	**75.1**	**-13.2**	**-12.2**	**-14.2**	**2.8**	**0.8**	**6.9**		
BENCHMARK DM			-12.8	-11.6	-14.1	3.1	0.3	6.2		
Excess			-0.5	-0.6	-0.1	-0.3	0.4	0.7		

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

	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	**$272,594,483**	**2.3%**	**-7.0%**	**-7.3%**	**-15.4%**				**2.0%**	**04/2017**
MSCI EMERGING MARKETS			-7.5	-8.5	-14.6				2.9	04/2017
Excess			0.5	1.2	-0.8				-1.0	
MARTIN CURRIE	**296,015,390**	**2.5**	**-9.1**	**-12.2**	**-16.6**				**5.3**	**04/2017**
BENCHMARK EM			-7.5	-8.5	-14.6				2.9	04/2017
Excess			-1.6	-3.7	-2.0				2.3	
MACQUARIE	**289,867,871**	**2.5**	**-8.2**	**-7.9**	**-13.3**				**3.8**	**04/2017**
BENCHMARK EM			-7.5	-8.5	-14.6				2.9	04/2017
Excess			-0.7	0.6	1.3				0.9	
MORGAN STANLEY	**548,211,205**	**4.6**	**-5.9**	**-8.2**	**-16.7**	**6.8%**	**1.5%**	**8.2%**	**8.9**	**01/2001**
BENCHMARK EM			-7.5	-8.5	-14.6	9.2	1.6	8.0	8.7	01/2001
Excess			1.6	0.2	-2.2	-2.5	-0.2	0.1	0.2	
NEUBERGER BERMAN	**283,493,316**	**2.4**	**-6.1**	**-10.9**	**-17.1**				**2.6**	**04/2017**
BENCHMARK EM			-7.5	-8.5	-14.6				2.9	04/2017
Excess			1.4	-2.5	-2.6				-0.3	
PZENA	**277,199,030**	**2.4**	**-7.3**	**-4.3**	**-10.8**				**1.9**	**04/2017**
BENCHMARK EM			-7.5	-8.5	-14.6				2.9	04/2017
Excess			0.2	4.2	3.8				-1.1	
ROCK CREEK	**264,167,798**	**2.2**	**-7.4**	**-11.2**	**-17.6**				**-1.0**	**04/2017**
BENCHMARK EM			-7.5	-8.5	-14.6				2.9	04/2017
Excess			0.1	-2.7	-3.1				-4.0	

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

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	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total Emerging Markets										
ACTIVE EMERGING MARKETS AGGREGATE	**$2,231,549,093**	**18.9%**	**-7.1%**	**-8.9%**	**-15.6%**	**6.8%**	**0.4%**	**7.1%**		
BENCHMARK EM			-7.5	-8.5	-14.6	9.2	1.6	8.0		
Excess			0.4	-0.4	-1.0	-2.4	-1.3	-0.9		
SSGA EMERGING MARKETS PASSIVE	**704,912,318**	**6.0**	**-7.5**	**-8.5**	**-14.7**	**9.2**	**1.7**		**3.3**	**01/2012**
BENCHMARK EM			-7.5	-8.5	-14.6	9.2	1.6		3.2	01/2012
Excess			-0.0	-0.0	-0.1	-0.0	0.1		0.1	
EMERGING MARKETS TOTAL	**2,936,461,411**	**24.9**	**-7.2**	**-8.8**	**-15.4**	**7.8**	**0.9**	**7.4**		
BENCHMARK EM			-7.5	-8.5	-14.6	9.2	1.6	8.0		
Excess			0.3	-0.3	-0.8	-1.4	-0.7	-0.7		

Total Emerging Markets

	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return	2013 Calendar Return
ACTIVE EMERGING MARKETS AGGREGATE	**37.2%**	**5.3%**	**-12.7%**	**-4.1%**	**0.6%**
BENCHMARK EM	37.3	11.2	-14.9	-2.2	-2.6
Excess	-0.1	-5.9	2.2	-2.0	3.2
SSGA EMERGING MARKETS PASSIVE	**37.4%**	**11.1**	**-14.6**	**-2.1**	**-2.5**
BENCHMARK EM	37.3%	11.2	-14.9	-2.2	-2.6
Excess	0.1%	-0.1	0.3	0.0	0.1
EMERGING MARKETS TOTAL	**37.7%**	**7.5**	**-13.1**	**-3.8**	**0.2**
BENCHMARK EM	37.3%	11.2	-14.9	-2.2	-2.6
Excess	0.4%	-3.7	1.9	-1.6	2.9

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Fixed Income

December 31, 2018

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Total Fixed Income										
ACTIVE FIXED INCOME AGGREGATE	**$5,566,379,718**	**55.4%**	**0.9%**	**1.3%**	**0.0%**	**3.0%**	**3.2%**	**5.5%**		
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5		
Excess			-0.7	-0.4	-0.0	1.0	0.6	2.0		
SEMI PASSIVE FIXED INCOME AGGREGATE	**4,485,587,782**	**44.6**	**1.4**	**1.5**	**-0.1**	**2.2**	**2.6**	**4.4**		
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5		
Excess			-0.3	-0.2	-0.1	0.1	0.1	0.9		
TRANSITION AGGREGATE FIXED INCOME (1)	17,743	0.0								
TOTAL FIXED INCOME (2)	**10,051,985,243**	**100.0**	**1.1**	**1.4**	**-0.0**	**2.6**	**2.9**	**4.9**	**7.4**	**07/1984**
Fixed Income Benchmark			1.6	1.7	0.0	2.1	2.5	3.5	7.1	07/1984
Excess			-0.5	-0.3	-0.1	0.5	0.4	1.5	0.3	

(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.

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

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

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

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

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Active Fixed Income Managers										
COLUMBIA	**$1,184,131,036**	**11.8%**	**1.0%**	**1.3%**	**0.2%**	**3.4%**	**3.2%**	**5.1%**	**5.3%**	**07/1993**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	5.1	07/1993
Excess			-0.7	-0.4	0.2	1.3	0.7	1.7	0.2	
DODGE & COX	**1,673,350,163**	**16.6**	**0.4**	**1.1**	**-0.0**	**3.0**	**3.0**	**5.3**	**5.8**	**02/2000**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	4.9	02/2000
Excess			-1.2	-0.6	-0.1	0.9	0.5	1.8	1.0	
PIMCO	**1,093,739,229**	**10.9**	**1.6**	**1.7**	**0.4**	**2.5**	**2.8**	**5.3**	**5.2**	**10/2008**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	3.8	10/2008
Excess			-0.1	0.0	0.4	0.4	0.3	1.8	1.4	
WESTERN	**1,615,159,290**	**16.1**	**1.0**	**1.3**	**-0.2**	**3.4**	**3.6**	**5.9**	**8.3**	**07/1984**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	7.1	07/1984
Excess			-0.6	-0.3	-0.3	1.3	1.0	2.4	1.1	
ACTIVE FIXED INCOME AGGREGATE	**5,566,379,718**	**55.4**	**0.9**	**1.3**	**0.0**	**3.0**	**3.2**	**5.5**		
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5		
Excess			-0.7	-0.4	-0.0	1.0	0.6	2.0		

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

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	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Semi Passive Fixed Income Managers										
BLACKROCK	**$1,281,723,459**	**12.8%**	**1.4%**	**1.5%**	**-0.1%**	**2.1%**	**2.6%**	**4.0%**	**5.1%**	**04/1996**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	5.0	04/1996
Excess			-0.2	-0.2	-0.2	0.0	0.1	0.5	0.1	
GOLDMAN SACHS	**1,630,630,900**	**16.2**	**1.2**	**1.3**	**-0.0**	**2.3**	**2.7**	**4.5**	**5.4**	**07/1993**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	5.1	07/1993
Excess			-0.4	-0.3	-0.0	0.2	0.2	1.0	0.3	
NEUBERGER	**1,573,233,423**	**15.7**	**1.5**	**1.6**	**-0.1**	**2.1**	**2.6**	**4.7**	**6.3**	**07/1988**
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5	6.1	07/1988
Excess			-0.2	-0.1	-0.1	0.0	0.1	1.2	0.2	
SEMI PASSIVE FIXED INCOME	**4,485,587,782**	**44.6**	**1.4**	**1.5**	**-0.1**	**2.2**	**2.6**	**4.4**		
BBG BARC Agg (Dly)			1.6	1.7	0.0	2.1	2.5	3.5		
Excess			-0.3	-0.2	-0.1	0.1	0.1	0.9		

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

STATE STREET.

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Treasuries

December 31, 2018

	Ending Market Value	Portfolio Weight	Last Qtr	Fiscal YTD	1 Year	3 Year	5 Year	10 Year	Since Inception	Inception Date
Treasuries Managers										
BLACKROCK	**$2,002,697,138**	**33.4%**	**3.7%**	**2.1%**					**2.3%**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.7	2.2					2.4	02/2018
Excess			-0.0	-0.1					-0.1	
GOLDMAN SACHS	**1,987,902,073**	**33.1**	**3.6**	**2.0**					**2.3**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.7	2.2					2.4	02/2018
Excess			-0.2	-0.2					-0.2	
NEUBERGER	**2,010,971,348**	**33.5**	**3.6**	**2.1**					**2.3**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.7	2.2					2.4	02/2018
Excess			-0.1	-0.1					-0.2	
TREASURIES TRANSITION ACCOUNT	294	0.0								
TOTAL TREASURIES	**6,001,570,853**	**100.0**	**3.6**	**2.1**					**2.3%**	**02/2018**
BBG BARC 5Y + Us Tsy Idx			3.7	2.2					2.4%	02/2018
Excess			-0.1	-0.1					-0.1%	

	2017 Calendar Return	2016 Calendar Return	2015 Calendar Return	2014 Calendar Return	2013 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					

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Private Markets
December 31, 2018

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	3.7%	8.0%	15.7%	13.8%	12.0%	10.3%	13.1%	13.6%	12.2%
Private Equity	3.8%	8.9%	17.8%	17.1%	15.7%	13.5%	14.2%	15.4%	
Private Credit	2.3	6.8	13.4	14.6	14.2	12.3	12.8		
Resources	4.7	7.6	12.8	5.6	1.0	4.1	15.2	14.9	
Real Estate	2.4	5.1	11.5	9.6	12.2	5.6	9.0	9.4	

Private Markets

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

Private Equity Investments

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

Private Credit Investments

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

Resource Investments

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

Real Estate Investments

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

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

Minnesota State Board of Investment
- Alternative Investments -

As of December 31, 2018

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	56,441,385	35,323,971	23,470,250	6.44	1.20	**6.29**
Adams Street Global Secondary Fund 6	100,000,000	6,200,000	6,246,371	1,214,007	93,800,000	25.58	1.20	**1.50**
Advent International								
Advent International GPE VI	50,000,000	52,993,313	12,722,055	97,617,913	0	17.28	2.08	**10.51**
Advent International GPE VII	90,000,000	84,690,641	97,810,047	64,082,078	5,400,000	19.30	1.91	**6.04**
Advent International GPE VIII	100,000,000	64,900,000	75,283,611	0	35,100,000	12.73	1.16	**2.65**
Affinity Ventures								
Affinity Ventures IV	4,000,000	4,000,000	584,872	1,541,970	0	-12.09	0.53	**14.26**
Affinity Ventures V	5,000,000	5,000,000	2,281,712	1,706,245	0	-4.22	0.80	**10.25**
APAX Partners								
Apax VIII - USD	200,000,000	222,011,295	200,003,196	128,629,531	14,644,515	13.95	1.48	**5.57**
Apax IX - USD	150,000,000	66,417,205	79,559,513	1,422,626	85,005,421	17.72	1.22	**2.37**
Asia Alternatives								
Asia Alternatives Capital Partners V	99,000,000	10,291,272	7,397,858	174,703	88,885,692	-47.87	0.74	**1.25**
Banc Fund								
Banc Fund VII	45,000,000	45,000,000	191,016	68,199,351	0	3.93	1.52	**13.51**
Banc Fund VIII	98,250,000	98,250,000	101,387,370	122,417,973	0	14.73	2.28	**10.44**
Banc Fund IX	107,205,932	107,205,932	128,633,718	13,921,426	0	12.43	1.33	**4.31**
Banc Fund X	67,890,909	9,812,000	9,674,504	0	58,078,909	-3.06	0.99	**0.42**
Blackstone Capital Partners								
Blackstone Capital Partners IV	70,000,000	84,400,319	7,039,895	195,063,621	1,891,866	37.04	2.39	**16.23**
Blackstone Capital Partners V	140,000,000	152,159,500	13,071,250	232,525,492	7,027,560	8.07	1.61	**12.67**
Blackstone Capital Partners VI	100,000,000	101,910,622	97,287,001	69,722,721	14,625,966	14.38	1.64	**10.19**
Blackstone Capital Partners VII	130,000,000	60,491,288	66,281,378	2,849,493	76,537,830	14.76	1.14	**3.25**
Blackstone Strategic Partners (CSFB/ DLJ)								
Strategic Partners III VC	25,000,000	24,990,864	4,385,982	30,395,105	1,073,318	6.37	1.39	**13.34**
Strategic Partners III-B	100,000,000	79,464,750	9,690,066	110,974,127	14,952,796	6.60	1.52	**13.34**
Strategic Partners IV VC	40,500,000	40,927,462	11,270,278	52,235,054	2,570,105	9.62	1.55	**10.52**
Strategic Partners IV-B	100,000,000	98,959,659	13,434,426	141,821,030	17,855,286	12.48	1.57	**10.29**
Strategic Partners V	100,000,000	83,545,145	24,688,476	111,082,854	38,531,642	19.65	1.63	**7.13**
Strategic Partners VI	150,000,000	92,367,565	61,351,747	79,253,760	63,451,634	19.39	1.52	**4.46**
Strategic Partners VII	150,000,000	93,579,251	110,090,316	13,054,121	69,509,234	37.26	1.32	**1.77**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Bridgepoint								
Bridgepoint Europe VI	171,472,460	0	-649,858	0	171,472,460	0.00	0.00	**0.53**
Brookfield Asset Management								
Brookfield Capital Partners Fund IV	100,000,000	87,020,863	99,027,490	74,448,678	26,786,178	59.09	1.99	**3.05**
Brookfield Capital Partners V	250,000,000	0	0	0	250,000,000	0.00	0.00	**0.19**
Cardinal Partners								
DSV Partners IV	10,000,000	10,000,000	30,949	39,196,082	0	10.61	3.92	**33.77**
Carlyle Group								
Carlyle Partners VII	150,000,000	4,939,800	3,698,201	0	145,060,200	-26.92	0.75	**0.79**
Chicago Growth Partners (William Blair)								
William Blair Capital Partners VII	50,000,000	48,150,000	963,361	69,201,191	1,650,000	8.59	1.46	**17.58**
Chicago Growth Partners I	50,000,000	52,441,998	2,019,860	54,532,745	300,000	1.76	1.08	**13.19**
Chicago Growth Partners II	60,000,000	58,347,626	4,535,966	120,959,703	1,652,374	19.82	2.15	**10.56**
Court Square Capital Partners								
Court Square Capital Partners	100,000,000	80,924,830	19,976	182,498,392	188,075	28.92	2.26	**16.81**
Court Square Capital Partners II	175,000,000	169,361,912	18,079,874	292,475,810	16,755,972	12.96	1.83	**12.08**
Court Square Capital Partners III	175,000,000	169,166,316	151,819,192	74,455,419	22,575,315	15.69	1.34	**6.33**
Court Square Capital Partners IV	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.40**
Crescendo								
Crescendo IV	101,500,000	103,101,226	9,216,221	44,348,592	0	-5.51	0.52	**18.57**
CVC Capital Partners								
CVC European Equity Partners V	133,948,953	153,756,444	42,679,624	241,437,942	1,632,691	16.40	1.85	**10.52**
CVC Capital Partners VI	257,737,487	255,517,001	235,052,120	71,239,674	6,088,546	10.02	1.20	**5.23**
Elevation Partners								
Elevation Partners	75,000,000	73,237,580	150,601	113,492,106	799,634	11.82	1.55	**13.38**
Fox Paine & Company								
Fox Paine Capital Fund II	50,000,000	46,541,161	0	90,994,335	0	18.88	1.96	**18.26**
GHJM Marathon Fund								
TrailHead Fund	20,000,000	16,070,803	31,711,901	2,406,955	3,935,813	17.13	2.12	**6.61**
Glouston Capital Partners**								
Glouston Private Equity Opportunities Fund IV	5,337,098	4,376,378	1,436,927	3,340,487	1,090,000	4.14	1.09	**3.76**
GS Capital Partners								
GS Capital Partners V	100,000,000	74,319,006	776,197	191,435,136	1,041,099	18.25	2.59	**13.51**
GS Capital Partners VI	100,000,000	109,470,534	14,632,082	128,631,772	3,047,591	7.33	1.31	**11.67**
GS Vintage VII	100,000,000	63,423,954	63,447,285	11,282,171	42,768,455	28.04	1.18	**2.26**
West Street Capital Partners VII	150,000,000	50,208,011	36,414,304	10,466,036	103,500,000	-6.70	0.93	**1.78**
GS China-US Cooperation Fund	99,800,000	0	0	0	99,800,000	0.00	0.00	**0.38**
GTCR								
GTCR IX	75,000,000	71,414,933	127,088	128,764,150	3,585,067	13.76	1.80	**12.26**
GTCR X	100,000,000	103,907,821	24,107,207	188,348,914	6,751,396	22.08	2.04	**7.81**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
GTCR XI	110,000,000	96,620,726	83,804,364	63,593,531	14,541,556	21.92	1.53	**4.88**
HarbourVest**								
Dover Street VII Cayman Fund	2,198,112	2,072,048	433,741	1,516,545	132,416	-3.07	0.94	**3.76**
HarbourVest Intl PE Partners V-Cayman US	3,523,509	3,344,847	1,082,965	3,342,915	182,904	14.79	1.32	**3.76**
Harbourvest Intl PE Partners VI-Cayman	4,238,067	3,999,555	3,866,616	2,168,200	240,061	16.39	1.51	**3.76**
HarbourVest Partners VIII Cayman Buyout	4,506,711	4,298,488	1,816,242	4,044,739	234,000	15.15	1.36	**3.76**
HarbourVest Partners VIII-Cayman Venture	7,190,898	7,079,986	4,122,488	4,912,418	140,000	9.27	1.28	**3.76**
Hellman & Friedman								
Hellman & Friedman Capital Partners V	160,000,000	146,165,961	163,573	389,795,506	8,070,303	27.89	2.67	**13.84**
Hellman & Friedman Capital Partners VI	175,000,000	171,037,755	13,364,436	307,986,481	5,084,864	13.10	1.88	**11.51**
Hellman & Friedman Capital Partners VII	50,000,000	49,688,391	67,602,158	54,121,827	2,413,964	24.36	2.45	**9.45**
Hellman & Friedman Investors IX	175,000,000	0	0	0	175,000,000	0.00	0.00	**0.26**
IK Investment Partners								
IK Fund VII	180,368,816	177,717,768	166,513,268	104,167,821	8,159,893	13.18	1.52	**5.05**
IK Fund VIII	172,521,877	107,829,122	117,763,047	2,213,957	66,838,658	10.00	1.11	**2.20**
Kohlberg Kravis Roberts								
KKR Millennium Fund	200,000,000	205,167,570	432,792	424,946,028	0	16.37	2.07	**15.82**
KKR 2006 Fund	200,000,000	218,994,309	61,838,764	313,339,408	3,360,223	9.01	1.71	**12.02**
KKR Americas Fund XII	150,000,000	52,155,940	53,370,675	988,851	98,446,832	9.11	1.04	**2.58**
KKR Asian Fund III	100,000,000	17,500,926	18,408,612	0	82,499,074	8.72	1.05	**1.50**
Leonard Green & Partners								
Green Equity Investors VI	200,000,000	215,247,049	209,675,720	128,896,733	21,246,903	15.37	1.57	**6.55**
Lexington Capital Partners								
Lexington Capital Partners VI	100,000,000	98,374,022	10,973,721	134,819,622	1,634,703	8.00	1.48	**12.77**
Lexington Capital Partners VII	200,000,000	170,805,743	60,532,075	209,930,929	39,720,961	15.00	1.58	**9.72**
Lexington Capital Partners VIII	150,000,000	103,436,005	102,542,715	39,186,553	58,252,559	24.15	1.37	**4.58**
Lexington Co-Investment Partners IV	200,000,000	105,183,120	108,372,591	6,715,339	101,532,219	17.04	1.09	**2.16**
Lexington Middle Market Investors IV	100,000,000	2,449,653	1,814,868	1,458,011	97,550,347	-62.40	1.34	**1.78**
Lexington Capital Partners IX	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.24**
Madison Dearborn Capital Partners								
Madison Dearborn Capital Partners VII	100,000,000	57,889,167	58,952,825	5,817,652	47,900,687	8.66	1.12	**2.79**
Neuberger Berman								
Dyal Capital Partners III	175,000,000	148,099,344	96,681,714	88,807,846	113,481,456	31.19	1.25	**3.45**
Dyal Capital Partners IV	250,000,000	12,500,000	11,771,838	31,580	237,500,000	-5.60	0.94	**0.48**
Nordic Capital								
Nordic Capital Fund VIII	178,849,825	190,003,473	144,052,941	113,548,413	103,433,285	12.86	1.36	**5.05**
Nordic Capital Fund IX Beta	171,472,460	0	5,103,940	0	171,472,460	0.00	0.00	**1.45**
North Sky Capital**								
North Sky Capital LBO Fund III	1,070,259	720,259	379,543	677,229	350,000	16.67	1.47	**3.76**
North Sky Capital Venture Fund III	1,384,080	1,277,830	388,559	1,190,311	106,250	10.42	1.24	**3.76**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Oak Hill Capital Management, Inc.								
Oak Hill Capital Partners IV	150,000,000	85,289,571	72,092,629	28,267,962	86,506,865	48.18	1.18	**1.81**
Paine Schwartz								
Paine Schwartz IV	75,000,000	51,684,432	49,189,557	14,823,737	24,388,722	10.50	1.24	**3.81**
Paine Schwartz V	126,340,000	0	-525,540	0	126,340,000	0.00	0.00	**0.41**
Permira								
Permira V	177,687,818	168,845,099	193,855,751	70,444,874	27,839,464	14.25	1.57	**4.75**
Permira VI	137,501,358	73,075,688	80,229,856	0	64,425,670	10.70	1.10	**2.18**
Public Pension Capital Management								
Public Pension Capital	150,000,000	61,781,755	78,400,125	10,831,733	97,311,442	19.72	1.44	**4.38**
RWI Ventures								
RWI Ventures I	7,603,265	7,603,265	454,150	6,122,274	0	-4.14	0.86	**12.26**
Silver Lake Partners								
Silver Lake Partners II	100,000,000	90,189,563	1,662,916	170,780,649	11,771,953	11.06	1.91	**14.26**
Silver Lake Partners III	100,000,000	91,821,024	60,628,847	155,672,820	10,559,311	19.62	2.36	**11.51**
Silver Lake Partners IV	100,000,000	105,481,745	131,884,739	45,075,127	10,350,594	25.81	1.68	**6.01**
Silver Lake Partners V	135,000,000	32,090,058	30,530,032	0	102,909,942	-7.21	0.95	**1.50**
Split Rock Partners								
Split Rock Partners	50,000,000	47,890,906	5,610,189	56,816,177	2,109,094	3.29	1.30	**13.42**
Split Rock Partners II	60,000,000	59,165,000	32,110,849	44,774,545	835,000	5.88	1.30	**10.43**
Summit Partners								
Summit Partners Growth Equity Fund VIII	100,000,000	115,015,327	67,100,106	147,345,310	23,281,108	24.27	1.86	**7.41**
Summit Partners Growth Equity Fund IX	100,000,000	64,000,000	61,853,873	9,973,626	45,973,626	21.82	1.12	**3.09**
Thoma Bravo								
Thoma Bravo Fund XII	75,000,000	68,776,888	72,857,393	2,298,018	8,592,365	7.19	1.09	**2.06**
Thoma Bravo Fund XIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.50**
Thoma Cressey								
Thoma Cressey Fund VII	50,000,000	50,000,000	469,037	107,057,940	0	23.59	2.15	**18.11**
Thoma Cressey Fund VIII	70,000,000	69,577,712	457,374	202,471,763	770,000	18.27	2.92	**12.42**
Thomas H. Lee Partners								
Thomas H. Lee Equity Fund VII	100,000,000	81,459,754	82,568,559	30,607,993	27,306,608	26.26	1.39	**3.06**
Thomas H. Lee Equity Fund VIII	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.50**
Thomas, McNerney & Partners								
Thomas, McNerney & Partners I	30,000,000	30,000,000	3,170,372	15,087,143	0	-8.01	0.61	**15.91**
Thomas, McNerney & Partners II	50,000,000	48,125,000	8,652,898	99,448,037	1,875,000	16.35	2.25	**12.26**
TPG Capital								
TPG Partners VII	100,000,000	74,264,402	81,938,250	6,837,318	31,814,859	13.07	1.20	**3.06**
Vestar Capital Partners								
Vestar Capital Partners IV	55,000,000	55,652,024	922,094	102,273,825	57,313	14.67	1.85	**18.81**
Vestar Capital Partners V	75,000,000	76,359,971	15,984,873	83,539,352	0	3.84	1.30	**12.79**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Vestar Capital Partners VI	100,000,000	106,195,246	73,867,249	118,359,663	1,821,992	29.58	1.81	**7.02**
Vestar Capital Partners VII	150,000,000	26,088,806	24,263,320	0	123,911,194	-30.65	0.93	**0.79**
Warburg Pincus								
Warburg Pincus Equity Partners	100,000,000	100,000,000	321,925	163,542,253	0	10.03	1.64	**20.28**
Warburg Pincus Private Equity VIII	100,000,000	100,380,464	9,135,601	223,623,951	0	14.86	2.32	**16.47**
Warburg Pincus Private Equity IX	100,000,000	100,000,000	6,540,964	168,124,301	0	9.81	1.75	**13.19**
Warburg Pincus Private Equity X	150,000,000	150,000,000	67,247,037	174,054,102	0	8.53	1.61	**10.94**
Warburg Pincus Private Equity XI	200,000,000	200,299,952	188,887,362	124,216,726	0	13.90	1.56	**5.78**
Warburg Pincus Private Equity XII	131,000,000	92,617,000	101,497,868	4,378,413	38,383,000	10.26	1.14	**2.87**
Warburg Pincus China	45,000,000	32,715,000	37,055,955	1,935,000	14,220,000	20.97	1.19	**1.80**
Warburg Pincus Financial Sector	90,000,000	23,575,808	17,264,376	4,590,000	70,920,000	-13.97	0.93	**0.79**
Warburg Pincus Global Growth	250,000,000	0	0	0	250,000,000	0.00	0.00	**0.11**
Wellspring Capital Partners								
Wellspring Capital Partners VI	125,000,000	6,372,571	3,684,053	0	118,627,429	-42.32	0.58	**2.05**
Welsh, Carson, Anderson & Stowe								
Welsh, Carson, Anderson & Stowe X	100,000,000	98,786,269	1,343	168,093,088	1,792,197	8.15	1.70	**12.80**
Welsh, Carson, Anderson & Stowe XI	100,000,000	100,000,000	37,004,860	129,502,945	0	12.82	1.67	**10.20**
Welsh, Carson, Anderson & Stowe XII	150,000,000	101,826,826	119,850,593	20,884,569	48,173,174	18.80	1.38	**3.78**
Welsh, Carson, Anderson & Stowe XIII	250,000,000	0	0	0	250,000,000	0.00	0.00	**0.52**
Windjammer Capital Investors								
Windjammer Mezzanine & Equity Fund II	66,708,861	55,215,684	64,015	84,876,800	10,139,363	8.94	1.54	**18.51**
Windjammer Senior Equity Fund III	75,000,000	62,684,411	293,050	154,618,016	13,380,380	19.54	2.47	**12.75**
Windjammer Senior Equity Fund IV	100,000,000	85,908,628	95,452,086	18,763,896	22,013,255	9.11	1.33	**6.60**
Windjammer Senior Equity Fund V	100,000,000	1,606,426	424,492	0	98,393,574	-18.46	0.26	**0.87**
Private Equity Total	**13,760,808,753**	**8,993,877,365**	**5,256,886,474**	**9,087,517,852**	**5,449,213,963**	**12.68**	**1.58**	
II. PRIVATE CREDIT								
Audax Group								
Audax Mezzanine Fund III	100,000,000	94,308,316	20,265,566	99,449,123	7,329,025	8.92	1.27	**8.49**
Audax Mezzanine Fund IV	100,000,000	35,779,458	27,314,082	11,370,640	64,867,492	9.59	1.08	**3.48**
BlackRock								
BlackRock Middle Market Senior Fund	250,000,000	20,306,154	20,306,154	0	229,693,846	0.00	1.00	**0.47**
Crescent Capital Group								
TCW/Crescent Mezzanine Partners III	75,000,000	79,161,593	209,329	159,070,683	29,733,852	35.87	2.01	**17.52**
Energy Capital Partners								
Energy Capital Credit Solutions II	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.00**
GS Mezzanine Partners								
GS Mezzanine Partners 2006	100,000,000	113,445,143	901,278	134,654,263	9,858,563	5.00	1.19	**12.49**
GS Mezzanine Partners V	150,000,000	147,691,560	1,784,516	178,674,923	37,594,230	8.99	1.22	**10.95**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Gold Hill Venture Lending								
Gold Hill Venture Lending	40,000,000	40,000,000	354,811	65,077,862	0	10.69	1.64	**14.02**
Gold Hill 2008	25,852,584	25,852,584	4,482,755	44,745,145	0	14.52	1.90	**10.25**
Kohlberg Kravis Roberts								
KKR Lending Partners II	75,000,000	85,731,990	33,137,354	68,515,431	8,802,924	10.42	1.19	**3.58**
KKR Lending Partners III	192,000,000	52,735,000	59,702,190	604,480	139,265,000	20.49	1.14	**1.48**
LBC Credit Partners								
LBC Credit Partners IV	100,000,000	59,946,431	56,388,861	11,167,767	45,354,716	12.05	1.13	**2.42**
Merit Capital Partners								
Merit Mezzanine Fund IV	75,000,000	70,178,571	7,278,145	129,772,046	4,821,429	11.42	1.95	**13.80**
Merit Mezzanine Fund V	75,000,000	70,665,306	42,826,350	58,784,893	4,334,694	9.43	1.44	**8.79**
Merit Mezzanine Fund VI	100,000,000	32,302,603	36,072,280	1,865,672	67,630,597	9.93	1.17	**2.52**
Portfolio Advisors								
DLJ Investment Partners II	27,375,168	24,490,887	731	34,915,513	0	10.37	1.43	**18.76**
DLJ Investment Partners III	100,000,000	82,719,050	658,231	96,478,980	509,988	6.85	1.17	**12.28**
Prudential Capital Partners								
Prudential Capital Partners II	100,000,000	97,290,943	6,078,550	136,300,055	10,794,044	8.91	1.46	**13.26**
Prudential Capital Partners III	100,000,000	99,615,422	15,248,683	151,558,153	15,438,477	13.61	1.67	**9.46**
Prudential Capital Partners IV	100,000,000	104,558,744	65,849,345	66,197,336	5,659,203	9.83	1.26	**6.70**
Prudential Capital Partners V	150,000,000	75,523,130	79,500,771	7,209,565	76,624,686	18.73	1.15	**2.12**
Summit Partners								
Summit Subordinated Debt Fund III	45,000,000	44,088,494	4,364,068	60,443,093	2,250,000	9.12	1.47	**14.63**
Summit Subordinated Debt Fund IV	50,000,000	55,837,807	6,466,972	70,055,724	19,926,328	10.40	1.37	**10.52**
TCW Asset Management								
TCW Direct Lending VI	100,000,000	83,599,652	44,850,393	50,361,774	25,329,409	7.17	1.14	**4.03**
TCW Direct Lending VII	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.72**
Private Credit Total	**2,430,227,752**	**1,595,828,839**	**534,041,417**	**1,637,273,120**	**1,005,818,501**	**12.07**	**1.36**	
III. REAL ASSETS								
BlackRock								
BlackRock Global Renewable Power Fund II	98,500,000	65,505,964	64,399,658	3,142,366	36,249,999	3.28	1.03	**2.85**
EIG Global Energy Partners								
EIG Energy Fund XIV	100,000,000	113,177,137	14,302,221	93,823,032	2,761,129	-1.52	0.96	**11.46**
EIG Energy Fund XV	150,000,000	157,920,504	77,425,667	111,323,592	22,871,323	4.95	1.20	**8.32**
EIG Energy Fund XVI	200,000,000	175,065,404	143,994,297	70,267,670	60,531,620	9.29	1.22	**5.05**
EnCap Energy								
EnCap Energy Capital Fund VII	100,000,000	105,344,451	9,564,932	133,001,117	0	15.03	1.35	**11.26**
EnCap Energy Capital Fund VIII	100,000,000	99,003,512	40,313,072	53,232,225	4,802,299	-1.69	0.94	**8.00**
Encap Energy Capital Fund IX	100,000,000	109,523,205	75,922,315	76,106,637	6,889,051	15.05	1.39	**5.82**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
EnCap Energy Capital Fund X	100,000,000	83,120,185	77,724,323	17,304,706	24,666,558	9.31	1.14	**3.58**
EnerVest Energy								
EnerVest Energy Institutional Fund XIV	100,000,000	93,671,832	100,877,896	39,158,126	14,421,234	18.99	1.49	**3.31**
Energy Capital Partners								
Energy Capital Partners II	100,000,000	85,329,367	18,053,596	110,405,699	29,749,110	11.26	1.51	**8.21**
Energy Capital Partners III	200,000,000	188,899,797	192,235,268	33,013,538	40,409,020	9.31	1.19	**4.78**
Energy Capital Partners IV	109,949,911	30,359,113	31,082,836	2,378,600	81,850,324	11.35	1.10	**0.75**
Energy & Minerals Group								
NGP Midstream & Resources	100,000,000	102,829,196	58,540,978	134,013,054	230,871	14.29	1.87	**11.51**
The Energy & Minerals Group Fund II	100,000,000	103,695,463	119,724,776	73,877,323	2,211,152	15.80	1.87	**7.02**
The Energy & Minerals Group Fund III	200,000,000	191,827,293	165,742,209	14,049,183	10,201,003	-1.79	0.94	**4.57**
The Energy & Minerals Group Fund IV	150,000,000	126,654,363	165,614,738	28,347,951	44,031,378	24.07	1.53	**2.93**
First Reserve								
First Reserve Fund X	100,000,000	100,000,000	355,449	182,429,002	0	31.05	1.83	**13.92**
First Reserve Fund XI	150,000,000	150,292,121	12,166,713	94,066,313	0	-7.14	0.71	**11.78**
First Reserve Fund XII	150,000,000	165,617,044	31,803,569	80,719,259	0	-8.83	0.68	**9.92**
First Reserve Fund XIII	200,000,000	136,434,769	104,380,119	60,159,279	85,701,453	12.93	1.21	**4.92**
Kohlberg, Kravis, Roberts & Co.								
KKR Global Infrastructure Investors III	149,850,000	10,382,858	10,382,858	0	139,467,142	0.00	1.00	**0.51**
Merit Energy Partners								
Merit Energy Partners B	24,000,000	24,000,000	4,671,802	186,741,940	0	24.28	7.98	**21.70**
Merit Energy Partners C	50,000,000	50,000,000	9,958,815	509,189,770	0	30.95	10.38	**19.93**
Merit Energy Partners D	88,000,000	70,938,303	17,027,049	328,483,253	0	22.58	4.87	**17.36**
Merit Energy Partners E	100,000,000	39,983,197	14,120,111	76,654,528	0	11.96	2.27	**14.01**
Merit Energy Partners F	100,000,000	59,522,861	15,207,540	28,351,202	0	-5.09	0.73	**12.53**
Merit Energy Partners H	100,000,000	100,000,000	75,961,625	24,238,423	0	0.05	1.00	**7.67**
Merit Energy Partners I	169,721,518	169,721,518	224,229,790	24,839,059	0	20.13	1.47	**3.96**
NGP								
Natural Gas Partners IX	150,000,000	173,372,658	3,033,033	244,359,789	1,153,855	12.02	1.43	**10.95**
NGP Natural Resources X	150,000,000	143,027,285	78,073,027	98,194,151	6,972,715	6.41	1.23	**6.98**
Natural Gas Capital Resources XI	150,000,000	135,470,252	160,079,558	25,612,902	20,725,084	19.98	1.37	**3.81**
NGP Natural Resources XII	149,500,000	49,132,800	50,102,281	0	100,347,589	3.44	1.02	**1.17**
Sheridan								
Sheridan Production Partners I	100,000,000	116,552,260	69,498,019	82,750,000	0	5.72	1.31	**11.51**
Sheridan Production Partners II	100,000,000	103,500,000	46,914,959	7,000,000	3,500,000	-11.68	0.52	**8.00**
Sheridan Production Partners III	100,000,000	34,353,005	36,863,004	15,950,000	65,650,000	22.64	1.54	**3.81**
Real Assets Total	**4,289,521,429**	**3,664,227,717**	**2,320,348,102**	**3,063,183,689**	**805,393,908**	**15.55**	**1.47**	

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
IV. REAL ESTATE								
Angelo, Gordon & Co.								
AG Asia Realty Fund IV	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.32**
Angelo, Gordon & Co.								
AG Realty Fund IX	100,000,000	85,141,582	90,735,744	13,500,000	18,650,000	12.58	1.22	**3.81**
AG Asia Realty Fund III	50,000,000	47,607,645	45,257,439	12,375,000	6,196,250	16.49	1.21	**2.00**
AG Europe Realty Fund II	75,000,000	34,125,000	33,411,992	28,384	40,875,000	-3.65	0.98	**1.28**
AG Realty Fund X	150,000,000	0	0	0	150,000,000	0.00	0.00	**0.41**
Blackstone								
Blackstone Real Estate Partners IX	300,000,000	0	0	0	300,000,000	0.00	0.00	**0.03**
Blackstone Real Estate Partners								
Blackstone Real Estate Partners V	100,000,000	104,213,007	10,028,575	197,169,956	4,174,052	10.85	1.99	**12.43**
Blackstone Real Estate Partners VI	100,000,000	109,477,567	9,664,678	208,868,068	4,907,906	13.10	2.00	**11.51**
Blackstone Real Estate Partners VII	100,000,000	106,606,893	71,961,778	113,745,952	14,684,232	17.14	1.74	**6.84**
Blackstone Real Estate Partners VIII	150,000,000	126,307,912	114,747,483	41,827,073	58,690,796	14.81	1.24	**3.52**
Blackstone Real Estate Partners Asia II	74,500,000	3,939,496	2,724,251	0	71,088,212	-36.81	0.69	**1.02**
Blackstone Strategic Partners (CSFB)								
Strategic Partners III RE	25,000,000	25,984,269	2,029,327	13,597,271	9,006	-6.28	0.60	**13.26**
Strategic Partners IV RE	50,000,000	51,385,480	6,807,931	44,856,259	1,164,368	0.09	1.01	**10.29**
Carlyle Group								
Carlyle Realty Partners VIII	150,000,000	10,181,523	8,022,065	4,054	139,831,398	-45.95	0.79	**1.41**
Colony Capital								
Colony Investors III	100,000,000	99,660,860	3,284,400	173,372,105	0	14.51	1.77	**20.76**
Landmark Partners								
Landmark Real Estate Partners VIII	149,500,000	31,777,231	24,679,723	12,967,730	118,009,599	34.19	1.18	**1.79**
Lubert Adler								
Lubert-Adler Real Estate Fund VII-B	74,147,868	32,364,976	31,536,353	1,250,230	42,635,024	1.43	1.01	**1.98**
Rockpoint								
Rockpoint Real Estate Fund V	100,000,000	70,095,648	67,156,353	14,396,791	49,330,181	11.50	1.16	**3.73**
Rockwood								
Rockwood Capital RE Partners X	100,000,000	58,431,492	60,664,363	1,954,546	41,475,304	5.98	1.07	**3.21**
Silverpeak Real Estate Partners								
Silverpeak Legacy Pension Partners II	75,000,000	72,965,488	1,803,582	90,801,977	7,599,582	4.23	1.27	**13.17**
Silverpeak Legacy Pension Partners III	150,000,000	70,415,574	13,418,813	12,176,170	79,588,976	-11.43	0.36	**10.42**
T.A. Associates Realty								
Realty Associates Fund VIII	100,000,000	100,000,000	818,752	98,549,060	0	-0.07	0.99	**12.26**
Realty Associates Fund IX	100,000,000	100,000,000	205,626	160,156,033	0	10.45	1.60	**10.10**
Realty Associates Fund X	100,000,000	100,000,000	57,541,726	94,792,220	0	12.22	1.52	**6.59**
Realty Associates Fund XI	100,000,000	100,000,000	105,615,200	5,993,419	0	7.49	1.12	**3.25**
Real Estate Total	**2,673,147,868**	**1,540,681,642**	**762,116,154**	**1,312,382,297**	**1,248,909,886**	**8.04**	**1.35**	

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
V. DISTRESSED/ OPPORTUNISTIC								
Avenue Capital Partners								
Avenue Energy Opportunities Fund	100,000,000	100,977,328	133,658,400	934,495	0	9.67	1.33	**4.25**
Avenue Energy Opportunities Fund II	100,000,000	91,950,117	99,090,687	417,420	8,049,883	12.54	1.08	**1.41**
BlackRock**								
BlackRock Tempus Fund	1,774,870	1,774,870	524,704	1,449,999	0	7.08	1.11	**3.31**
Carlyle Group								
Carlyle Strategic Partners IV	100,000,000	32,900,639	25,536,867	10,843,718	77,901,188	13.66	1.11	**2.50**
Carval Investors								
CVI Global Value Fund	200,000,000	190,000,000	9,266,159	311,161,915	10,000,000	9.55	1.69	**11.72**
CVI Credit Value Fund I	100,000,000	95,000,000	6,520,027	206,151,330	5,000,000	18.75	2.24	**8.01**
CVI Credit Value Fund A II	150,000,000	142,500,000	44,974,849	161,161,239	7,500,000	8.96	1.45	**5.92**
CVI Credit Value Fund A III	150,000,000	142,500,000	159,760,313	14,940,475	7,500,000	9.84	1.23	**3.33**
CVI Credit Value Fund IV	150,000,000	52,703,333	53,325,248	60	97,500,000	2.04	1.01	**0.99**
Merced Capital								
Merced Partners II	75,000,000	63,768,881	272,217	130,393,875	0	23.97	2.05	**11.51**
Merced Partners III	100,000,000	100,000,000	37,188,455	97,997,107	0	6.30	1.35	**8.41**
Merced Partners IV	125,000,000	124,968,390	92,527,956	63,122,049	0	6.17	1.25	**5.22**
Merced Partners V	53,737,500	53,915,358	59,277,944	0	0	7.04	1.10	**1.25**
MHR Institutional Partners								
MHR Institutional Partners IV	75,000,000	33,934,392	30,393,430	2,895,304	43,902,332	-1.02	0.98	**4.28**
Oaktree Capital Management								
Oaktree Principal Fund VI	100,000,000	84,397,719	83,661,139	14,037,147	28,382,062	13.34	1.16	**3.76**
Oaktree Opportunities Fund X	50,000,000	46,500,000	52,334,073	5,619,660	8,500,000	17.53	1.25	**3.64**
Oaktree Opportunities Fund Xb	100,000,000	12,500,000	12,405,600	0	87,500,000	-1.68	0.99	**3.64**
Oaktree Special Situations Fund II	100,000,000	-3,585	0	0	100,000,000	0.00	0.00	**0.44**
Pimco Bravo**								
Pimco Bravo Fund OnShore Feeder I	3,958,027	3,958,027	229,529	3,937,010	2,306,448	4.86	1.05	**3.76**
Pimco Bravo Fund OnShore Feeder II	5,243,670	4,670,656	3,330,865	2,732,580	3,300,406	6.95	1.30	**3.76**
TSSP								
TSSP Adjacent Opportunities Partner	50,000,000	12,599,871	12,683,623	0	37,400,129	0.92	1.01	**0.50**
TSSP Adjacent Opportunities Contingent	100,000,000	0	0	0	100,000,000	0.00	0.00	**0.57**
TSSP Opportunities Partners IV	50,000,000	0	0	0	50,000,000	0.00	0.00	**0.39**
Varde Fund								
Varde Fund IX	100,000,000	100,000,000	1,256,194	215,051,276	0	15.02	2.16	**10.28**
Varde Fund X	150,000,000	150,000,000	54,166,828	236,984,272	0	12.05	1.94	**8.45**
Varde Fund XI	200,000,000	200,000,000	207,914,448	80,767,754	0	8.04	1.44	**5.23**
Wayzata								
Wayzata Opportunities Fund	100,000,000	93,180,000	0	156,919,289	18,920,000	8.42	1.68	**12.79**

Investment	Total Commitment	Total Contribution	Market Value	Distributions	Unfunded Commitment	IRR %	NET MOIC*	Period Years
Wayzata Opportunities Fund II	150,000,000	174,750,000	6,526,814	322,403,595	30,000,000	16.48	1.88	**10.95**
Wayzata Opportunities Fund III	150,000,000	68,415,000	32,489,398	34,378,882	15,000,000	-0.78	0.98	**6.30**
Distressed/Opportunistic Total	**2,889,714,067**	**2,177,860,996**	**1,219,315,768**	**2,074,300,450**	**738,662,449**		**1.51**	
Private Markets Total	**26,043,419,869**	**17,972,476,559**	**10,092,707,915**	**17,174,657,409**	**9,247,998,706**	**12.50**	**1.51**	

Private Markets Portfolio Status	Investment Manager Count	Investments Count
PRIVATE EQUITY	50	127
PRIVATE CREDIT	12	25
REAL ASSETS	12	37
REAL ESTATE	11	23
DISTRESSED/ OPPORTUNISTIC	11	29
Total	96	241

Notes

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

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

* MOIC: Multiple of Invested Capital
**Partnership interests transferred to the MSBI during 1Q2015. All data presented as of the transfer date.

Participant Directed Investment Program

December 31, 2018

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Participant Directed Investment Program

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

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

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

Supplemental Investment Fund Summary

The Minnesota Supplemental Investment Fund (SIF) is a multi-purpose investment program that offers a range of investment options to state and local public employees. The SIF provides some or all of the investment options to the Unclassified Employees Retirement Plan, Minnesota Deferred Compensation Plan, Public Employees Defined Contribution Plan, Hennepin County Supplemental Retirement Plan, Health Care Savings Plan, local police and firefighter retirement plans and the Statewide Volunteer Firefighter plan.

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

Investment Option Descriptions

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year	Option Since
BALANCED FUND	$421,737,546	-8.3%	-2.9%	6.5%	5.9%	9.8%	01/1980
U.S. ACTIVELY MANAGED FUND	232,506,314	-15.9	-4.3	9.1	7.8	13.4	07/1986
U.S. STOCK INDEX FUND	557,485,822	-14.3	-5.3	9.0	7.9	13.2	07/1986
BROAD INTERNATIONAL STOCK FUND	171,932,252	-11.8	-14.5	3.8	0.9	7.0	09/1994
BOND FUND	168,506,510	1.1	-0.0	2.6	2.9	5.0	07/1986
MONEY MARKET FUND	441,833,859	0.6	2.1	1.2	0.8	0.5	07/1986
STABLE VALUE FUND	1,567,837,138	0.6	2.4	2.2	2.1	2.8	11/1994
VOLUNTEER FIREFIGHTER ACCOUNT	98,090,443	-6.3	-3.7	5.2	4.4		01/2010
TOTAL SUPPLEMENTAL INVESTMENT FUND	3,659,940,878						

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

Supplemental Investment Fund Performance

Balanced Fund

The primary investment objective of the Balanced Fund is to gain exposure to publicly traded U.S. equities, bond and cash in a diversified investment portfolio. The Fund seeks to maximize long-term real rates of return, while limiting short-run portfolio return volatility. The Balanced Fund is invested in a balanced portfolio of common stocks and bonds. Common stocks provide the potential for significant capital appreciation, while bonds act as a deflation hedge and provide portfolio diversification. The benchmark is a blend of 60% Russell 3000/35% Barclays Aggregate Bond Index/5% T-Bills Composite.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
BALANCED FUND	**$421,737,546**	**-8.3%**	**-2.9%**	**6.5%**	**5.9%**	**9.8%**
SIF BALANCED FUND BENCHMARK		-8.1	-2.8	6.3	5.8	9.3
Excess		-0.2	-0.1	0.2	0.1	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	**232,506,314**	**-15.9**	**-4.3**	**9.1**	**7.8**	**13.4**
Russell 3000		-14.3	-5.2	9.0	7.9	13.2
Excess		-1.6	0.9	0.1	-0.1	0.2

Supplemental Investment Fund Performance

U.S. Stock Index Fund

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
U.S. STOCK INDEX FUND	**$557,485,822**	**-14.3%**	**-5.3%**	**9.0%**	**7.9%**	**13.2%**
Russell 3000		-14.3	-5.2	9.0	7.9	13.2
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	**171,932,252**	**-11.8**	**-14.5**	**3.8**	**0.9**	**7.0**
International Equity Benchmark		-11.5	-14.2	4.5	0.7	6.6
Excess		-0.4	-0.3	-0.6	0.2	0.4

STATE STREET.

Supplemental Investment Fund Performance

Bond Fund

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
BOND FUND	**$168,506,510**	**1.1%**	**-0.0%**	**2.6%**	**2.9%**	**5.0%**
BBG BARC US Agg		1.6	0.0	2.1	2.5	3.5
Excess		-0.5	-0.0	0.5	0.4	1.5

Money Market Fund

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
MONEY MARKET FUND	**441,833,859**	**0.6**	**2.1**	**1.2**	**0.8**	**0.5**
90 DAY T-BILL		0.6	1.9	1.0	0.6	0.4
Excess		0.1	0.2	0.2	0.2	0.1

Supplemental Investment Fund Performance

Stable Value Fund

The investment objectives of the Stable Value Fund are to protect investors from loss of their original investment and to provide competitive interest rates using somewhat longer-term investments than typically found in a money market fund. The Fund is invested in a well-diversified portfolio of high-quality fixed income securities with strong credit ratings. The Fund also invests in contracts issued by highly rated insurance companies and banks which are structured to provide principal protection for the Fund's diversified bond portfolios, regardless of daily market changes. The Stable Value Fund Benchmark is the 3-year Constant Maturity Treasury Bill +45 basis points. Please note that the Market Value for the Stable Value Fund reflects assets held through the Deferred Compensation Plan as well.

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
STABLE VALUE FUND	**$1,567,837,138**	**0.6%**	**2.4%**	**2.2%**	**2.1%**	**2.8%**
Fixed Interest Blended Benchmark		0.8	3.1	2.1	1.8	1.6
Excess		-0.2	-0.7	0.1	0.2	1.2

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	**98,090,443**	**-6.3**	**-3.7**	**5.2**	**4.4**	
SIF Volunteer Firefighter Account BM		-6.1	-3.7	4.9	4.2	
Excess		-0.2	-0.0	0.3	0.2	

Deferred Compensation Plan Summary

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

Participants choose from 4 actively managed stock and bond funds, 5 passively managed stock and bond funds and a set of 10 target date retirement fund options.

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year	Option Since
VANGUARD INSTITUTIONAL INDEX PLUS	$1,147,852,076	-13.5%	-4.4%	9.2%	8.5%	13.1%	07/1999
VANGUARD DIVIDEND GROWTH	592,837,315	-9.0	0.2				10/2016
VANGUARD MID CAP INDEX	473,902,357	-15.5	-9.2	6.4	6.2	13.9	01/2004
T. ROWE PRICE SMALL-CAP STOCK	648,500,817	-16.1	-3.1	10.0	6.8	15.6	04/2000
FIDELITY DIVERSIFIED INTERNATIONAL	258,776,164	-14.2	-15.2	1.1	0.6	6.7	07/1999
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	180,415,053	-11.7	-14.4	4.6	1.0		07/2011
VANGUARD BALANCED INDEX	734,053,360	-8.1	-2.8	6.4	5.9	9.6	12/2003
DODGE & COX INCOME	238,264,742	0.3	-0.3	3.2	2.9	5.0	07/1999
VANGUARD TOTAL BOND MARKET INDEX	209,767,237	1.6	-0.1	2.0	2.5	3.4	12/2003
2020 FUND	119,828,311	-4.4	-3.2	4.3	3.3		07/2011
2025 FUND	125,437,882	-6.1	-4.5	5.1	3.8		07/2011
2030 FUND	87,122,178	-7.9	-5.9	5.8	4.3		07/2011
2035 FUND	68,778,423	-9.0	-6.7	6.1	4.5		07/2011
2040 FUND	51,720,870	-9.9	-7.3	6.3	4.6		07/2011
2045 FUND	42,548,736	-10.8	-7.9	6.5	4.6		07/2011
2050 FUND	32,137,189	-11.6	-8.5	6.7	4.7		07/2011
2055 FUND	17,916,583	-11.7	-8.6	6.7	4.7		07/2011
2060 FUND	15,644,325	-11.7	-8.6	6.7	4.7		07/2011
INCOME FUND	85,916,782	-3.9	-2.8	3.7	2.6		07/2011
TD Ameritrade SDB	68,948,381						
TD Ameritrade SDB Roth	734,664						
Total Deferred Compensation Plan	5,201,103,445						

Deferred Compensation Plan Options

LARGE CAP EQUITY

Vanguard Index Institutional Plus (passive)

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

Vanguard Dividend Growth (active) (1)

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

MID CAP EQUITY

Vanguard Mid Cap Index (passive) (2)

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

SMALL CAP EQUITY

T Rowe Price Small Cap (active)

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

INTERNATIONAL EQUITY

Fidelity Diversified International (active)

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

Vanguard Total International Stock Index (passive) (3)

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
Large Cap US Equity						
VANGUARD INSTITUTIONAL INDEX PLUS	**$1,147,852,076**	**-13.5%**	**-4.4%**	**9.2%**	**8.5%**	**07/1999**
S&P 500		-13.5	-4.4	9.3	8.5	07/1999
Excess		-0.0	-0.0	-0.0	-0.0	
VANGUARD DIVIDEND GROWTH	**592,837,315**	**-9.0**	**0.2**			**10/2016**
NASDAQ US Dividend Achievers Select		-11.0	-2.0			10/2016
Excess		2.0	2.2			
Mid Cap US Equity						
VANGUARD MID CAP INDEX	**473,902,357**	**-15.5**	**-9.2**	**6.4**	**6.2**	**01/2004**
CRSP US Mid Cap Index		-15.5	-9.2	6.4	6.2	01/2004
Excess		0.0	0.0	-0.0	-0.0	
Small Cap US Equity						
T. ROWE PRICE SMALL-CAP STOCK	**648,500,817**	**-16.1**	**-3.1**	**10.0**	**6.8**	**04/2000**
Russell 2000		-20.2	-11.0	7.4	4.4	04/2000
Excess		4.1	7.9	2.7	2.3	
International Equity						
FIDELITY DIVERSIFIED INTERNATIONAL	**258,776,164**	**-14.2**	**-15.2**	**1.1**	**0.6**	**07/1999**
MSCI EAFE FREE (NET)		-12.5	-13.8	2.9	0.5	07/1999
Excess		-1.6	-1.5	-1.8	0.1	
VANGUARD TOTAL INTERNATIONAL STOCK INDEX	**180,415,053**	**-11.7**	**-14.4**	**4.6**	**1.0**	**07/2011**
FTSE Global All Cap ex US Index Net		-11.8	-14.8	4.3	0.9	07/2011
Excess		0.1	0.4	0.3	0.1	

Deferred Compensation Options

BALANCED

Vanguard Balanced Index (passive) (4)

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

FIXED INCOME

Dodge & Cox Income Fund (active)

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

Vanguard Total Bond Market Index (passive)

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

SIF Money Market Fund (5)

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

STABLE VALUE

SIF Stable Value Fund (5)

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
Balanced Funds						
VANGUARD BALANCED INDEX	**$734,053,360**	**-8.1%**	**-2.8%**	**6.4%**	**5.9%**	**12/2003**
Vanguard Balanced Fund Benchmark		-8.0	-2.8	6.4	5.9	12/2003
Excess		-0.0	0.0	0.0	-0.0	
Fixed Income						
DODGE & COX INCOME	**238,264,742**	**0.3**	**-0.3**	**3.2**	**2.9**	**07/1999**
BBG BARC Agg Bd		1.6	0.0	2.1	2.5	07/1999
Excess		-1.3	-0.3	1.1	0.4	
VANGUARD TOTAL BOND MARKET INDEX	**209,767,237**	**1.6**	**-0.1**	**2.0**	**2.5**	**12/2003**
BBG BARC Agg Bd		1.6	0.0	2.1	2.5	12/2003
Excess		-0.0	-0.1	-0.0	-0.1	
MONEY MARKET FUND	**441,833,859**	**0.6**	**2.1**	**1.2**	**0.8**	**07/1986**
90 DAY T-BILL		0.6	1.9	1.0	0.6	07/1986
Excess		0.1	0.2	0.2	0.2	
Stable Value						
STABLE VALUE FUND	**1,567,837,138**	**0.6**	**2.4**	**2.2**	**2.1**	**11/1994**
Fixed Interest Blended Benchmark		0.8	3.1	2.1	1.8	11/1994
Excess		-0.2	-0.7	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) SIF Money Market and SIF Fixed Interest are Supplemental Investment Fund opitons which are also offered under the Deferred Compensation Plan.

Deferred Compensation Options

MN TARGET RETIREMENT ACCOUNTS

Target retirement funds offer a mix of investments that are adjusted over time to reduce risk and become more conservative as the target retirement date approaches. A participant only needs to make one investment decison by investing their assets in the fund that is closest to their anticipated retirement date.

Target Date Retirement Funds

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
SSgA						
2020 FUND	**$119,828,311**	**-4.4%**	**-3.2%**	**4.3%**	**3.3%**	**07/2011**
2020 FUND BENCHMARK		-4.4	-3.1	4.3	3.3	07/2011
Excess		0.0	-0.0	0.0	-0.0	
2025 FUND	**125,437,882**	**-6.1**	**-4.5**	**5.1**	**3.8**	**07/2011**
2025 FUND BENCHMARK		-6.1	-4.5	5.1	3.9	07/2011
Excess		0.0	0.0	0.0	-0.0	
2030 FUND	**87,122,178**	**-7.9**	**-5.9**	**5.8**	**4.3**	**07/2011**
2030 FUND BENCHMARK		-7.9	-5.9	5.8	4.3	07/2011
Excess		0.0	-0.0	0.0	-0.0	
2035 FUND	**68,778,423**	**-9.0**	**-6.7**	**6.1**	**4.5**	**07/2011**
2035 FUND BENCHMARK		-9.0	-6.7	6.0	4.5	07/2011
Excess		0.0	-0.0	0.0	-0.0	
2040 FUND	**51,720,870**	**-9.9**	**-7.3**	**6.3**	**4.6**	**07/2011**
2040 FUND BENCHMARK		-9.9	-7.3	6.3	4.6	07/2011
Excess		0.0	-0.0	0.0	-0.0	

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	Option Since
2045 FUND	**$42,548,736**	**-10.8%**	**-7.9%**	**6.5%**	**4.6%**	**07/2011**
2045 FUND BENCHMARK		-10.8	-7.9	6.5	4.7	07/2011
Excess		0.0	-0.0	0.1	-0.0	
2050 FUND	**32,137,189**	**-11.6**	**-8.5**	**6.7**	**4.7**	**07/2011**
2050 FUND BENCHMARK		-11.6	-8.5	6.6	4.7	07/2011
Excess		0.0	0.0	0.1	-0.0	
2055 FUND	**17,916,583**	**-11.7**	**-8.6**	**6.7**	**4.7**	**07/2011**
2055 FUND BENCHMARK		-11.7	-8.6	6.6	4.7	07/2011
Excess		0.0	0.0	0.1	-0.0	
2060 FUND	**15,644,325**	**-11.7**	**-8.6**	**6.7**	**4.7**	**07/2011**
2060 FUND BENCHMARK		-11.7	-8.6	6.6	4.7	07/2011
Excess		0.0	0.0	0.1	-0.0	
INCOME FUND	**85,916,782**	**-3.9**	**-2.8**	**3.7**	**2.6**	**07/2011**
INCOME FUND BENCHMARK		-3.9	-2.8	3.7	2.7	07/2011
Excess		0.0	-0.0	-0.0	-0.1	

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

MN College Savings Plan Options

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

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

AGE-BASED MANAGED ALLOCATIONS

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

RISK BASED ALLOCATIONS

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

ASSET CLASS BASED ALLOCATIONS

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

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

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

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

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

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

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

MINNESOTA COLLEGE SAVINGS PLAN
Performance Statistics for the Period Ending: December 31, 2018

Fund Name	Ending Market	3 Months	1 Year	Annualized 3 Years	5 Years	10 Years	Since Inception	Inception Date
Managed Ages 0-4	$30,628,206	-10.26%	-6.28%	6.16%			4.72%	8/12/2014
BM: Managed Ages 0-4		-10.02%	-6.07%	6.30%			4.83%	
Managed Ages 5-8	$64,656,374	-8.99%	-5.49%	5.68%			4.34%	8/12/2014
BM: Managed Ages 5-8		-8.70%	-5.30%	5.86%			4.49%	
Managed Ages 9-10	$58,947,717	-7.70%	-4.82%	5.22%			3.97%	8/12/2014
BM: Managed Ages 9-10		-7.37%	-4.54%	5.40%			4.13%	
Managed Ages 11-12	$89,594,022	-6.58%	-4.20%	4.67%			3.52%	8/12/2014
BM: Managed Ages 11-12		-6.05%	-3.69%	4.86%			3.71%	
Managed Ages 13-14	$124,195,327	-5.22%	-3.38%	4.17%			3.14%	8/12/2014
BM: Managed Ages 13-14		-4.71%	-2.85%	4.31%			3.28%	
Managed Age 15	$79,622,506	-3.59%	-2.00%	3.62%			2.76%	8/12/2014
BM: Managed Age 15		-3.39%	-1.82%	3.60%			2.73%	
Managed Age 16	$80,592,580	-3.21%	-1.68%	3.22%			2.49%	8/12/2014
BM: Managed Age 16		-2.73%	-1.26%	3.20%			2.42%	
Managed Age 17	$80,415,534	-2.47%	-1.16%	2.91%			2.28%	8/12/2014
BM: Managed Age 17		-2.07%	-0.69%	2.81%			2.11%	
Managed Ages 18 & Over	$199,474,527	-1.62%	-0.27%	2.66%			2.11%	8/12/2014
BM: Managed Ages 18 & Over		-1.40%	-0.13%	2.41%			1.80%	
U.S. and International Equity Option	$264,872,087	-12.66%	-7.58%	6.99%	5.72%	10.91%	6.27%	10/ 1/2001
BM: U.S. and International Equity Option		-12.64%	-7.65%	7.17%	5.89%	11.28%	7.13%	

MINNESOTA COLLEGE SAVINGS PLAN

Performance Statistics for the Period Ending: December 31, 2018

Fund Name	Ending Market	3 Months	1 Year	Annualized 3 Years	5 Years	10 Years	Since Inception	Inception Date
Moderate Allocation Option	$63,714,568	-7.71%	-4.84%	5.18%	4.39%	7.86%	4.49%	8/ 2/2007
BM: Moderate Allocation Option		-7.37%	-4.54%	5.40%	4.65%	8.38%	5.05%	
100% Fixed-Income Option	$15,012,190	0.49%	-0.55%	2.12%	2.13%	3.14%	3.27%	8/16/2007
BM: 100% Fixed-Income Option		0.74%	-0.24%	2.45%	2.48%	3.61%	3.92%	
International Equity Index Option	$4,545,163	-11.40%	-13.66%	4.18%	0.66%		2.56%	6/18/2013
BM: International Equity Index Option		-11.53%	-13.91%	4.18%	0.83%		2.82%	
Money Market Option	$11,599,396	0.48%	1.65%	0.77%	0.46%	0.19%	0.44%	11/ 1/2007
BM: Money Market Option		0.46%	1.42%	0.66%	0.40%	0.23%	0.45%	
Principal Plus Interest Option	$117,006,483	0.52%	1.79%	1.57%	1.44%	1.84%	2.52%	10/10/2001
Citigroup 3-Month U.S. Treasury Bill		0.57%	1.86%	0.99%	0.60%	0.35%	1.29%	
Aggressive Allocation Option	$22,356,524	-10.13%	-6.13%	6.23%			4.72%	8/12/2014
BM: Aggressive Allocation Option		-10.02%	-6.07%	6.30%			4.83%	
Conservative Allocation Option	$9,825,277	-3.71%	-2.11%	3.55%			2.54%	8/18/2014
BM: Conservative Allocation Option		-3.39%	-1.82%	3.60%			2.57%	
Equity and Interest Accumulation Option	$3,485,124	-7.01%	-1.47%	5.36%			4.42%	8/18/2014
BM: Equity and Interest Accumulation Option		-6.98%	-1.46%	5.08%			4.13%	
U.S. Large Cap Equity Option	$26,213,389	-13.53%	-4.61%	9.02%			8.08%	8/12/2014
BM: U.S. Large Cap Equity Option		-13.52%	-4.38%	9.26%			8.31%	
Matching Grant	$2,414,048	0.52%	1.79%	1.57%	1.44%	1.84%	2.53%	3/22/2002
Citigroup 3-Month U.S. Treasury Bill		0.57%	1.86%	0.99%	0.60%	0.35%	1.27%	

MINNESOTA ABLE plan
A member of The National ABLE Alliance

Performance as of
12/31/18

Total Market Value: **$ 4,189,912**

Fund Name	Market Value	% of Plan	1 Month	3 Months	YTD	1 Year	3 Year	5 Year	10 Year	Inception	Inception Date
Aggressive Option	$ 387,748	9.25%	(7.48)	(12.19)	(7.40)	(7.40)				4.21	12/15/16
ABLE Aggressive Custom Benchmark			(7.36)	(12.20)	(7.22)	(7.22)				4.80	
Variance			**(0.12)**	**0.01**	**(0.18)**	**(0.18)**				**(0.59)**	
Moderately Aggressive Option	$ 389,301	9.29%	(6.09)	(10.08)	(6.09)	(6.09)				3.79	12/15/16
ABLE Moderately Aggressive Custom Benchmark			(5.90)	(10.01)	(5.78)	(5.78)				4.38	
Variance			**(0.19)**	**(0.07)**	**(0.31)**	**(0.31)**				**(0.59)**	
Growth Option	$ 565,197	13.49%	(4.72)	(8.00)	(4.72)	(4.72)				3.32	12/15/16
ABLE Growth Custom Benchmark			(4.47)	(7.82)	(4.37)	(4.37)				3.93	
Variance			**(0.25)**	**(0.18)**	**(0.35)**	**(0.35)**				**(0.61)**	
Moderate Option	$ 498,695	11.90%	(3.28)	(5.77)	(3.37)	(3.37)				2.94	12/15/16
ABLE Moderate Custom Benchmark			(3.07)	(5.63)	(3.01)	(3.01)				3.43	
Variance			**(0.21)**	**(0.14)**	**(0.36)**	**(0.36)**				**(0.49)**	
Moderately Conservative Option	$ 457,643	10.92%	(2.05)	(3.67)	(1.78)	(1.78)				2.37	12/15/16
ABLE Moderately Conservative Custom Benchmark			(1.89)	(3.53)	(1.45)	(1.45)				2.80	
Variance			**(0.16)**	**(0.14)**	**(0.33)**	**(0.33)**				**(0.43)**	
Conservative Option	$ 653,325	15.59%	(0.48)	(0.86)	0.29	0.29				1.60	12/15/16
ABLE Conservative Custom Benchmark			(0.37)	(0.74)	0.62	0.62				1.90	
Variance			**(0.11)**	**(0.12)**	**(0.33)**	**(0.33)**				**(0.30)**	
Checking Option	$ 1,238,004	29.55%									03/30/17

MINNESOTA ACHIEVE A BETTER LIFE EXPERIENCE

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

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

RISK BASED ALLOCATIONS

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

ascensus | college savings

Non-Retirement

December 31, 2018

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

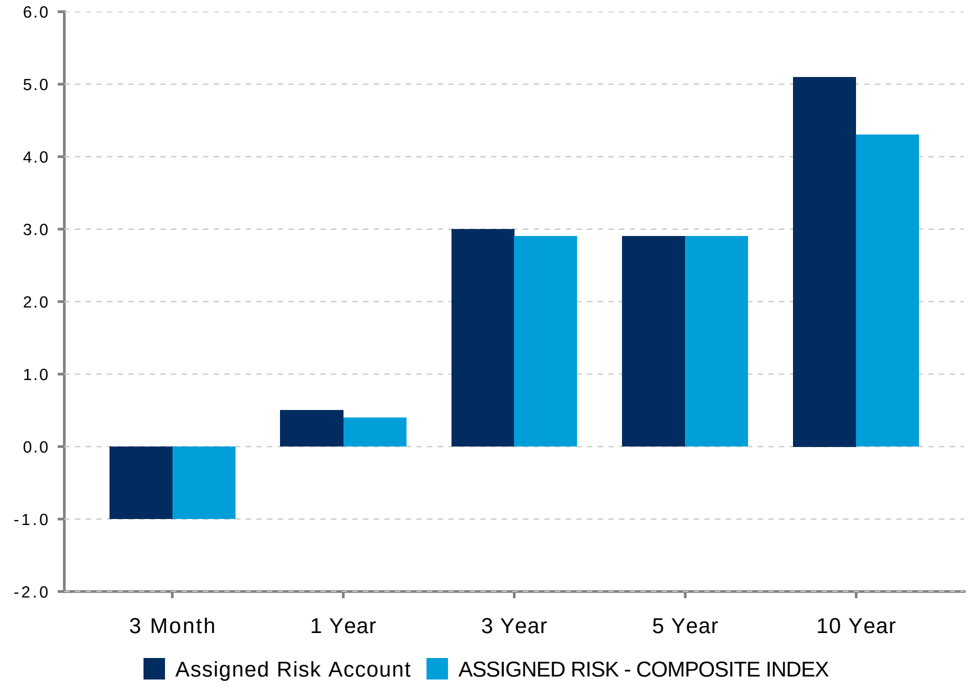
Assigned Risk Plan

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.

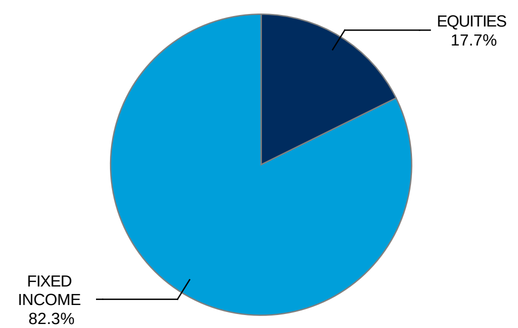
The Assigned Risk Plan is invested in a portfolio of common stocks and bonds

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	$270,933,244	-1.0%	0.5%	3.0%	2.9%	5.1%
EQUITIES	47,985,949	-13.5	-4.4	8.9	7.6	12.5
FIXED INCOME	222,947,296	2.1	1.4	1.3	1.5	3.1
ASSIGNED RISK - COMPOSITE INDEX		-1.0	0.4	2.9	2.9	4.3
Excess		-0.0	0.1	0.1	-0.1	0.8
S&P 500		-13.5	-4.4	9.3	8.5	13.1
BBG BARC US Gov: Int		2.2	1.4	1.2	1.5	1.8



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.

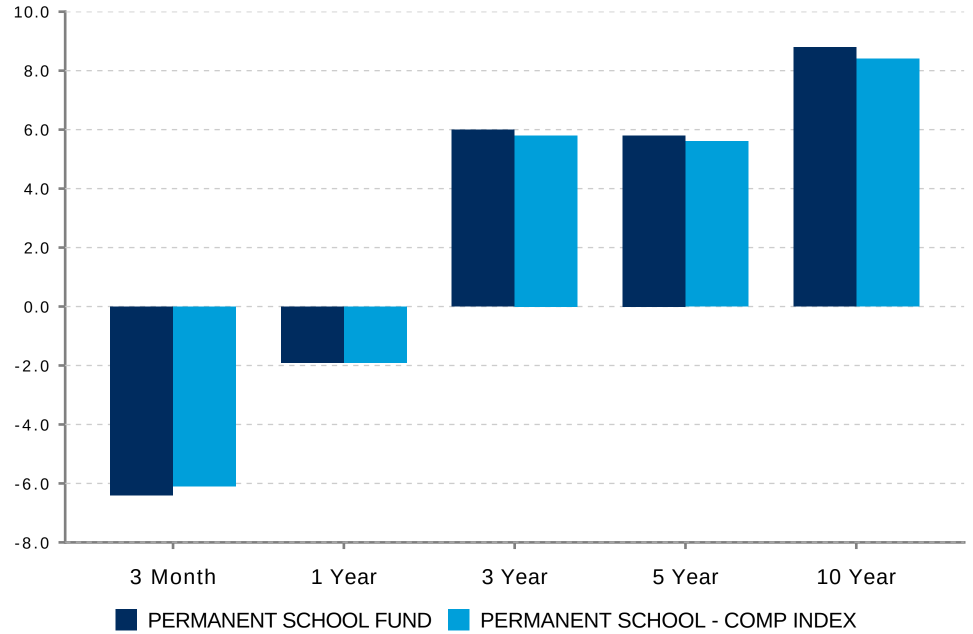
Non-Retirement

Permanent School Fund

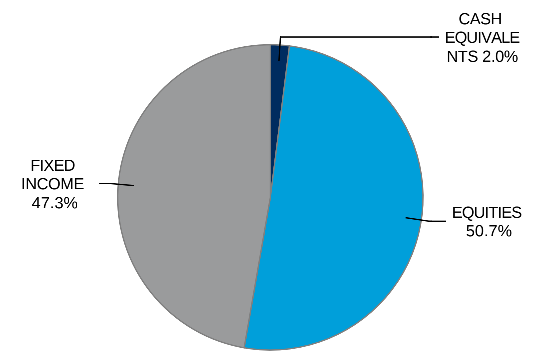
The investment objective of the Permanent School Fund is to produce a growing level of spendable income, within the constraints of maintaining adequate portfolio quality and liquidity. The income from the portfolio is transferred to the school endowment fund and distributed to Minnesota's public schools.

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	$1,348,036,469	-6.4%	-1.9%	6.0%	5.8%	8.8%
CASH EQUIVALENTS	26,459,804	0.6	2.0	1.1	0.7	0.5
EQUITIES	684,626,350	-13.5	-4.4	9.2	8.5	13.1
FIXED INCOME	636,950,315	1.4	0.0	2.4	2.8	4.4
PERMANENT SCHOOL - COMP INDEX		-6.1	-1.9	5.8	5.6	8.4
Excess		-0.3	-0.1	0.2	0.1	0.4
S&P 500		-13.5	-4.4	9.3	8.5	13.1
BBG BARC US Agg		1.6	0.0	2.1	2.5	3.5



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.

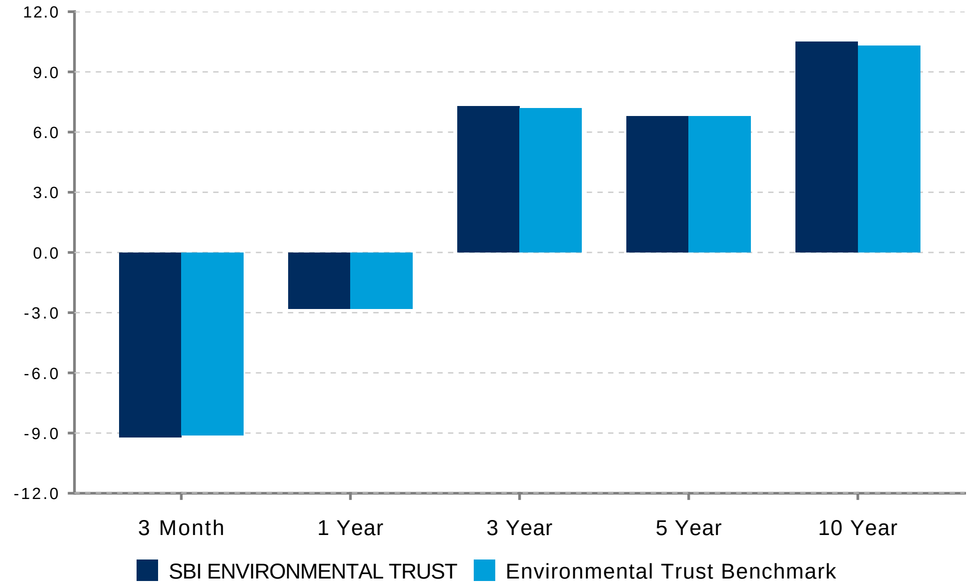
Non-Retirement

Environmental Trust Fund

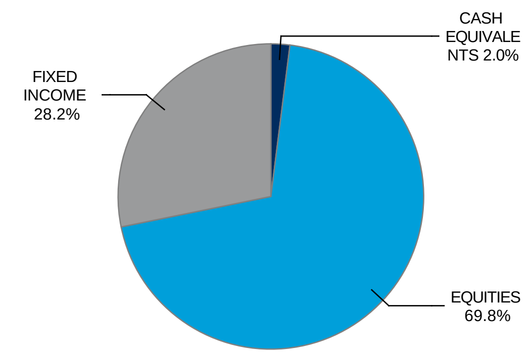
The objective of the Environmental Trust Fund is to increase the market value of the Fund over time in order to increase the annual amount made available for spending within the constraints of maintaining adequate portfolio quality and liquidity.

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	$1,064,298,130	-9.2%	-2.8%	7.3%	6.8%	10.5%
CASH EQUIVALENTS	20,957,175	0.6	2.0	1.1	0.7	0.5
EQUITIES	743,288,393	-13.5	-4.4	9.2	8.5	13.1
FIXED INCOME	300,052,562	1.4	0.0	2.4	2.8	4.4
Environmental Trust Benchmark		-9.1	-2.8	7.2	6.8	10.3
Excess		-0.1	-0.0	0.1	0.1	0.2
S&P 500		-13.5	-4.4	9.3	8.5	13.1
BBG BARC US Agg		1.6	0.0	2.1	2.5	3.5



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.

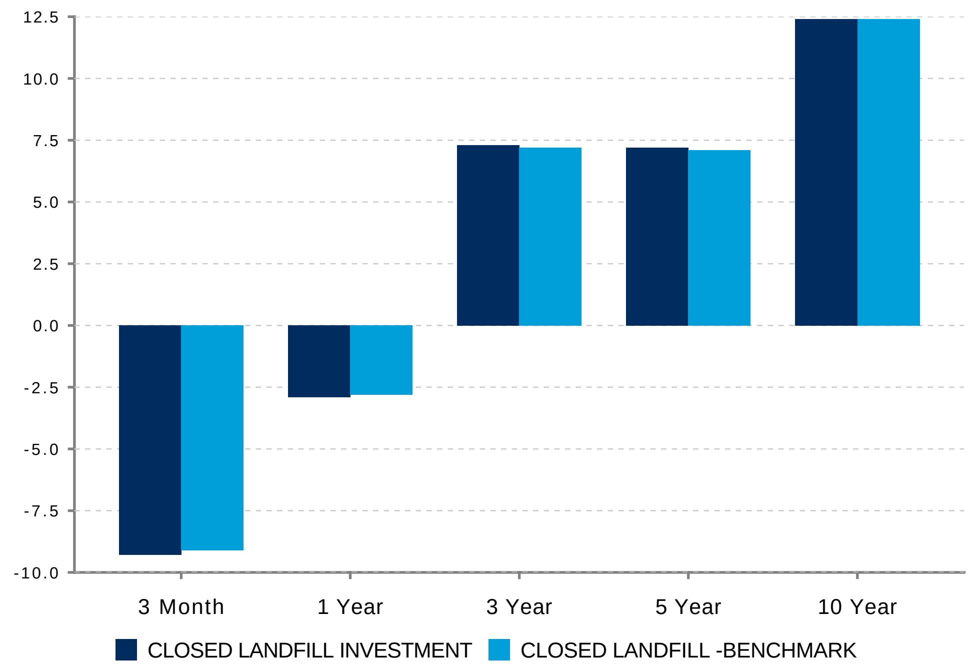
STATE STREET

Non-Retirement

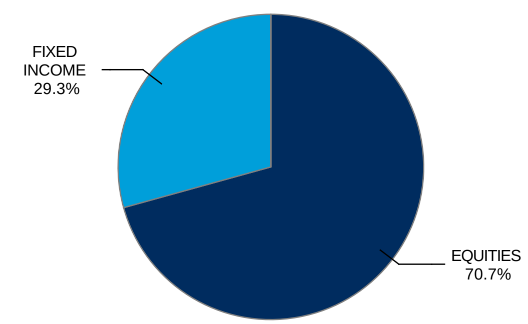
Closed Landfill Investment Fund

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	$84,136,438	-9.3%	-2.9%	7.3%	7.2%	12.4%
EQUITIES	59,477,870	-13.5	-4.4	9.2	8.5	13.1
FIXED INCOME	24,658,568	1.4	0.0	2.4		
CLOSED LANDFILL -BENCHMARK		-9.1	-2.8	7.2	7.1	12.4
Excess		-0.2	-0.1	0.1	0.1	0.0
S&P 500		-13.5	-4.4	9.3	8.5	13.1
BBG BARC US Agg		1.6	0.0	2.1	2.5	3.5



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	**2,076,412,281**	**-13.5**	**-6.9**	**-4.4**	**9.2**	**8.5**	**13.1**	**9.2**	**07/1993**
S&P 500 INDEX (DAILY)		-13.5	-6.9	-4.4	9.3	8.5	13.1	9.1	07/1993
Excess		0.0	0.0	-0.0	-0.0	0.0	-0.0	0.1	
NON RETIREMENT FIXED INCOME - PRUDENTIAL	**1,121,921,271**	**1.4**	**1.6**	**-0.0**	**2.4**	**2.8**	**4.3**	**5.8**	**07/1994**
BBG BARC Agg (Dly)		1.6	1.7	0.0	2.1	2.5	3.5	5.4	07/1994
Excess		-0.2	-0.0	-0.0	0.4	0.3	0.9	0.5	
RBC	**222,947,392**	**2.1**	**2.0**	**1.4**	**1.3**	**1.5**	**3.1**	**4.8**	**07/1991**
RBC Custom Benchmark		2.2	2.1	1.4	1.2	1.5	2.0	4.9	07/1991
Excess		-0.1	-0.1	-0.0	0.1	0.1	1.2	-0.1	
MET COUNCIL OPEB BOND POOL	76,144,855	1.5	1.6						

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.

STATE STREET

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State Cash

December 31, 2018

State Cash Accounts

Invested Treasurer's Cash

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

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

- Safety of Principal. To preserve capital.
- Liquidity. To meet cash needs without the forced sale of securities at a loss.
- Competitive Rate of Return. To provide a level of current income consistent with the goal of preserving capital.

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

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

	Ending Market Value	Last Qtr	1 Year	3 Year	5 Year	10 Year
Treasurer's Cash	12,006,911,022	0.6	2.0	1.3	1.0	1.0
iMoneyNet Money Fund Average-All Taxable		0.5	1.5	0.7	0.4	0.2

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	95,770,470	1.7	1.5	2.0	2.6	
Housing Finance	93,075,853	0.6	2.3	1.5	1.8	
Public Facilities Authority	60,577,665	0.9	1.2	1.9	2.5	

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

Domestic Equity Benchmark:

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

Fixed Income Benchmark:

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

Addendum

Benchmark Definitions (continued)

Fixed Interest Blended Benchmark:

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

International Equity Benchmark:

Since 6/1/08 the International Equity asset class target is the Standard (large + mid) MSCI ACWI ex U.S. (net). From 10/1/07 through 5/31/08 the benchmark was the Provisional Standard MSCI ACWI ex U.S. (net). From 10/1/03 to 9/30/07 the target was MSCI ACWI ex U.S. (net). From 1/1/01 to 9/30/03, the target was MSCI EAFE Free (net) plus Emerging Markets Free (net), and from 7/1/99 to 12/31/00 the target was MSCI EAFE Free (net) plus Emerging Markets Free (gross). From 7/1/99 to 9/30/03, the weighting of each index fluctuated with market capitalization. From 10/1/01 to 5/31/02 all international benchmarks being reported were the MSCI Provisional indices. From 12/31/96 to 6/30/99 the benchmark was fixed at 87% EAFE Free (net)/13% Emerging Markets Free (gross). On 5/1/96, the portfolio began transitioning from 100% EAFE Free (net) to the 12/31/96 fixed weights. Prior to 5/1/96 it was 100% the EAFE Free (net).

Passive Domestic Equity Benchmark:

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

Passive Manager Benchmark:

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

Public Equity Benchmark:

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

Semi-Passive Domestic Equity Benchmark:

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