



Investment Performance FY 2018

South Dakota Retirement System

August 27, 2018

Capital Markets Benchmark Return and Market Index Components

	<u>1st qtr</u>	<u>2nd qtr</u>	<u>3rd qtr</u>	<u>4th qtr</u>	<u>FY 2018</u>
Capital Markets Benchmark	3.3%	3.7%	-1.6%	1.9%	7.33%
<u>Benchmark Index Components-weights</u>					
<i>Global Equity</i>					58%
Global Equity Benchmark (MSCI ACW 2/3 + MSCI US 1/3)	4.9%	6.0%	-0.9%	1.5%	11.78%
<i>Real Estate</i>					10%
MSCI REITS	0.9%	1.4%	-8.1%	10.1%	3.57%
<i>High Yield Debt</i>					7%
Citigroup High Yield	1.9%	0.5%	-0.7%	1.1%	2.81%
<i>Investment Grade Fixed Income</i>					23%
Citigroup Broad Investment Grade	0.8%	0.4%	-1.5%	-0.2%	-0.45%
<i>Cash</i>					2%
Citigroup 3 mo Treasury bills	0.3%	0.3%	0.3%	0.4%	1.33%

Time weighted rate-of-return

Actual to Benchmark Allocation Comparison – June 30, 2018

	<u>Actual Asset Allocation</u>	<u>Benchmark Asset Allocation</u>	<u>Difference</u>	<u>Permissible Range</u>
Global Equity	28%	58%	-30%	75% to 25%
Real Estate - Core/REITS	0%	10%	-10%	20% to 2%
High Yield Corporate Debt	0%	7%	-7%	15% to 0%
Investment Grade Fixed Income	13%	23%	-10%	50% to 13%
Cash	32%	2%	30%	50% to 0%
Private Equity	8%	0%	8%	12% to 0%
Opportunistic Real Estate	7%	0%	7%	15% to 0%
High Yield Real Estate Debt	7%	0%	7%	10% to 0%
High Yield Corp Debt Aggressive	4%	0%	4%	15% to 0%
Aggressive Abs Return	1%	0%	1%	5% to 0%
US Treasury TIPS	0%	0%	0%	5% to 0%
Commodity	0%	0%	0%	5% to 0%
Merger Arbitrage	0%	0%	0%	10% to 0%
Convertible Arbitrage	0%	0%	0%	5% to 0%
Equity Like Risk	51.0%	70%	-19.0%	85% to 50%

Total Fund Performance Attribution

SDRS to Capital Markets Benchmark FY 2018

SDRS Total Fund Return	7.94%
Capital Markets Benchmark Return	<u>7.33%</u>
Difference	<u>0.61%</u>

Fair Value 6/30/18 \$12,222,471,572

Primary Asset Allocation	
Equity-Like Risk	-1.56%
Bond-Like Risk	0.04%
Cash-Like Risk	<u>0.34%</u>
Total Primary Asset Allocation	<u>-1.18%</u>

Secondary Asset Allocation	
Global Equity	N/A
Investment Grade Debt	N/A
Cash	N/A
REITS / Core	0.56%
High Yield Corporate Debt	0.20%
High Yield Distressed aggressive	-0.22%
High Yield Real Estate Debt	-0.07%
High Yield RE Debt aggressive	-0.09%
Real Estate Opportunistic	-0.48%
Private Equity	N/A
Hedge Fund	N/A
Short S&P 500 Futures	<u>N/A</u>
Total Secondary Asset Allocation	<u>-0.10%</u>

Total Asset Allocation **-1.28%**

Portfolio Added Value (Alpha)	
Global Equity	0.46%
Investment Grade Debt	-0.01%
Cash	-0.03%
REITS / Core	N/A
High Yield Corporate Debt	N/A
High Yield Distressed aggressive	0.26%
High Yield Real Estate Debt	0.27%
High Yield RE Debt aggressive	0.13%
Real Estate Opportunistic	0.54%
Private Equity	0.53%
Hedge Fund	0.02%
Short S&P 500 Futures	-0.41%

Total Portfolio Added Value (Alpha) **1.77%**

Total Explained Difference **0.49%**

Other - interperiod trading/asset allo 0.12%

Total Difference **0.61%**

SDRS

Performance Attribution History

	<u>FY 2018</u>	<u>FY 2017</u>	<u>FY 2016</u>	<u>FY 2015</u>	<u>FY 2014</u>	<u>FY 2013</u>	<u>FY 2012</u>	<u>FY 2011</u>	<u>FY 2010</u>	<u>FY 2009</u>	<u>10 yr Ann</u>
SDRS Total Return*	7.9%	13.8%	0.3%	4.2%	18.9%	19.5%	1.9%	25.8%	18.7%	-20.4%	8.3%
Capital Markets Return	<u>7.3%</u>	<u>11.0%</u>	<u>2.9%</u>	<u>2.1%</u>	<u>17.5%</u>	<u>12.7%</u>	<u>2.0%</u>	<u>22.1%</u>	<u>11.1%</u>	<u>-18.0%</u>	<u>6.5%</u>
Difference	0.6%	2.9%	-2.6%	2.1%	1.4%	6.8%	-0.1%	3.8%	7.6%	-2.4%	1.8%
Portfolio Alphas											
Global Equity	0.5%	1.8%	-0.4%	0.1%	0.3%	3.7%	1.1%	-0.8%	2.1%	5.6%	1.6%
Fixed Income/HY (pre 07)	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	-0.1%	0.1%	0.1%	0.3%	0.1%
Distressed Debt/HY (post 06)	0.7%	0.6%	0.8%	0.5%	0.2%	1.2%	-0.2%	0.2%	0.5%	-0.8%	0.4%
Real Estate	0.5%	1.4%	-2.9%	0.8%	0.6%	0.6%	-1.3%	2.3%	2.1%	-7.0%	-0.2%
Private Equity	0.5%	0.0%	0.3%	0.3%	-0.4%	-0.8%	-1.1%	-0.2%	1.2%	-1.8%	-0.2%
Hedge/Merger Arbitrage	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.3%	0.2%	-0.5%	0.0%
Convertible Arbitrage	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	0.0%	-0.1%	0.2%	0.0%
Tips/Commodities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Short S & P 500 Futures	-0.4%	0.1%	-0.8%	-0.6%	-0.1%						
Cash	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total Portfolio Alpha difference	1.8%	3.9%	-3.1%	1.2%	0.6%	4.7%	-1.6%	1.9%	6.2%	-3.8%	1.7%
Asset Allocation											
Global Equity	-1.6%	-1.6%	-0.1%	0.0%	1.2%	-0.7%	0.0%	-1.4%	-0.4%	2.2%	-0.4%
Fixed Income	0.0%	0.0%	-0.5%	-0.1%	-0.2%	0.0%	-0.4%	-0.2%	-0.4%	-0.2%	-0.2%
Distressed Debt/ High Yield	-0.2%	0.3%	0.4%	0.0%	0.0%	0.1%	0.0%	0.3%	0.6%	0.7%	0.2%
Real Estate	0.1%	-0.1%	0.6%	0.4%	-0.4%	0.7%	0.8%	0.7%	-0.1%	-1.1%	0.1%
Private Equity	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.6%	2.0%	0.8%	-1.6%	0.2%
Hedge/Merger Arbitrage	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	-0.2%	0.0%
Convertible Arbitrage	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.1%	0.0%	0.1%	0.0%
Tips/Commodities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.2%	0.0%	0.8%	0.1%
Cash	<u>0.3%</u>	<u>0.1%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.1%</u>
Total Asset Allocation difference	-1.3%	-1.3%	0.5%	0.3%	0.5%	1.1%	1.1%	1.1%	0.5%	0.7%	0.2%
Other	0.1%	0.2%	0.0%	0.5%	0.3%	1.0%	0.4%	0.8%	1.0%	0.8%	-0.1%
Total Difference	0.6%	2.9%	-2.6%	2.1%	1.4%	6.8%	-0.1%	3.8%	7.6%	-2.4%	1.8%

* Net FY 2014-18, Gross pre-FY 2014

SDRS

Performance Attribution History, cont'd

	<u>FY 2008</u>	<u>FY 2007</u>	<u>FY 2006</u>	<u>FY 2005</u>	<u>FY 2004</u>	<u>FY 2003</u>	<u>FY 2002</u>	<u>FY 2001</u>	<u>FY 2000</u>	<u>FY 1999</u>	<u>20 yr Ann</u>
SDRS Total Return*	-8.7%	21.4%	13.1%	13.3%	16.6%	5.0%	-4.9%	-2.9%	10.8%	14.6%	7.8%
Capital Markets Return	<u>-4.2%</u>	<u>17.6%</u>	<u>10.7%</u>	<u>9.6%</u>	<u>15.5%</u>	<u>5.4%</u>	<u>-5.8%</u>	<u>-5.2%</u>	<u>9.7%</u>	<u>13.3%</u>	<u>6.4%</u>
Difference	-4.5%	3.8%	2.4%	3.7%	1.1%	-0.4%	1.0%	2.3%	1.1%	1.3%	1.4%
Portfolio Alphas											
Global Equity	-6.2%	-0.1%	-0.3%	0.8%	-0.4%	0.0%	1.9%	2.9%	-0.1%	0.8%	0.6%
Fixed Income/HY (pre 07)	0.1%	0.1%	-0.1%	0.3%	-0.1%	0.2%	-0.6%	-0.3%	-0.1%	-0.1%	0.0%
Distressed Debt/HY (post 06)	-0.1%	0.0%	0.1%	0.1%	0.1%	0.1%					
Real Estate	-1.0%	3.0%	0.9%	2.1%	0.5%	0.0%	0.1%	0.5%	0.6%	1.0%	0.2%
Private Equity	1.8%	0.0%	0.6%	0.7%	0.3%	-0.2%	0.2%	-0.2%	0.0%	-0.3%	0.0%
Hedge/Merger Arbitrage	-0.1%	-0.1%	0.1%	-0.1%	0.0%	0.1%	-0.1%	-0.1%	0.6%	0.4%	0.0%
Convertible Arbitrage	0.1%	0.0%	0.2%	-0.2%	-0.1%	0.0%	0.1%	0.0%	0.1%	0.1%	0.0%
Tips/Commodities	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%					
Short S & P 500 Futures											
Cash	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>
Total Portfolio Alpha difference	-5.4%	2.8%	1.6%	3.6%	0.3%	0.3%	1.5%	2.9%	1.2%	1.9%	1.2%
Asset Allocation											
Global Equity	0.8%	-0.1%	0.7%	0.3%	0.9%	-0.7%	-0.2%	-0.1%	0.1%	-1.0%	-0.1%
Fixed Income	-0.3%	-0.7%	0.0%	-0.3%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.1%	-0.2%
Distressed Debt/ High Yield	-0.1%	0.0%	0.0%	0.0%	0.1%	0.2%					
Real Estate	0.8%	0.5%	0.0%	-0.1%	-0.2%	0.0%	-0.1%	-0.1%	-0.1%	0.2%	0.1%
Private Equity	-0.4%	0.3%	0.1%	0.1%	0.0%	0.2%	0.0%	-0.2%	0.1%	-0.2%	0.1%
Hedge/Merger Arbitrage	0.1%	0.0%	0.0%	0.1%	0.0%	-0.1%	-0.1%	0.0%	0.1%	0.0%	0.0%
Convertible Arbitrage	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Tips/Commodities	-0.6%	0.1%	-0.2%	-0.2%	-0.2%	-0.2%					
Cash	<u>0.2%</u>	<u>0.3%</u>	<u>0.1%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.0%</u>	<u>0.2%</u>	<u>0.1%</u>
Total Asset Allocation difference	0.5%	0.3%	0.6%	-0.1%	0.5%	-0.8%	-0.4%	-0.5%	0.1%	-0.6%	0.0%
Other	0.5%	0.7%	0.2%	0.2%	0.3%	0.1%	-0.2%	-0.1%	-0.2%	0.0%	0.2%
Total Difference	-4.5%	3.8%	2.4%	3.7%	1.1%	-0.4%	1.0%	2.3%	1.1%	1.3%	1.4%

* Net FY 2014-18, Gross pre-FY 2014

Comparison to Peer Universes

Annualized Returns

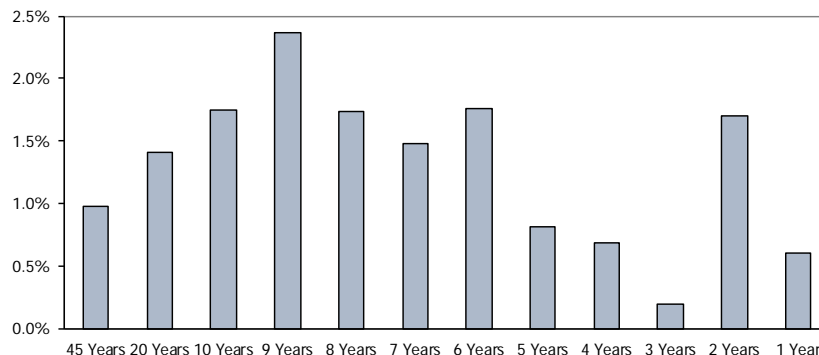
	<u>1 Year</u>	<u>2 Year</u>	<u>3 Year</u>	<u>4 Year</u>	<u>5 Year</u>	<u>10 Year</u>
SDRS (net)	7.94%	10.84%	7.21%	6.44%	8.82%	7.97%
SDRS (gross)	8.35%	11.22%	7.56%	6.76%	9.16%	8.43%
=====						
State Fund (net) - PRELIMINARY	8.6%	10.5%	7.3%	6.4%	8.4%	6.6%
BNY Mellon Master Trust (gross)	7.7%		6.7%		7.8%	6.4%
BNY Public Plans (gross)	8.6%					
Wilshire TUCS (gross)	8.6%	10.5%	7.2%	6.3%	8.3%	6.7%

Total Fund Return Comparison

Annualized

	<u>SDRS Total Fund</u>	<u>SDRS Capital Markets Benchmark</u>	<u>Over/Under Performance</u>
45 Years	10.36%	9.39%	0.98%
20 Years	7.83%	6.42%	1.40%
10 Years	8.26%	6.52%	1.75%
9 Years	12.02%	9.66%	2.36%
8 Years	11.21%	9.48%	1.73%
7 Years	9.26%	7.79%	1.48%
6 Years	10.54%	8.78%	1.76%
5 Years	8.82%	8.01%	0.82%
4 Years	6.44%	5.76%	0.68%
3 Years	7.20%	7.01%	0.20%
2 Years	10.84%	9.13%	1.70%
1 Year	7.94%	7.33%	0.61%

SDRS Total Fund Over/Under Performance Chart



Annual Returns

	<u>SDRS Total Fund</u>	<u>SDRS Capital Markets Benchmark</u>	<u>Over/Under Performance</u>
2009	-20.36%	-18.00%	-2.36%
2010	18.73%	11.12%	7.61%
2011	25.84%	22.06%	3.78%
2012	1.91%	2.02%	-0.10%
2013	19.53%	12.73%	6.80%
2014	18.90%	17.49%	1.41%
2015	4.18%	2.09%	2.09%
2016	0.30%	2.88%	-2.59%
2017	13.81%	10.96%	2.85%
2018	7.94%	7.33%	0.61%

SDRS Total Fund Over/Under Performance Chart



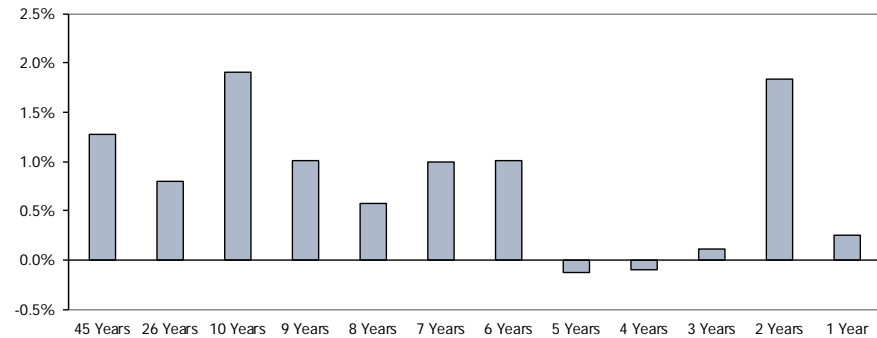
* Total Fund Return History
 1973 - 2013 is gross-of-fee
 2014 - 2018 is net-of-fee

Internal Global Equity Return Comparison

Annualized

	SDRS Internal Gbl Eq	Internal Gbl Eq Benchmark	Over/Under Performance
45 Years	11.59%	10.32%	1.27%
26 Years	9.85%	9.06%	0.79%
10 Years	9.86%	7.95%	1.90%
9 Years	13.92%	12.91%	1.01%
8 Years	13.56%	12.98%	0.58%
7 Years	11.62%	10.63%	0.99%
6 Years	13.76%	12.76%	1.00%
5 Years	11.36%	11.49%	-0.13%
4 Years	8.39%	8.49%	-0.10%
3 Years	10.29%	10.17%	0.11%
2 Years	17.53%	15.69%	1.84%
1 Year	12.75%	12.50%	0.25%

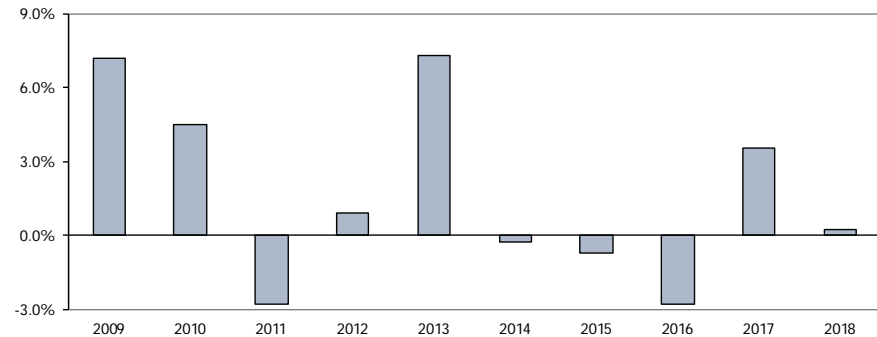
SDRS Internal Global Equity Over/Under Performance Chart



Annual Returns

	SDRS Internal Gbl Eq	Internal Gbl Eq Benchmark	Over/Under Performance
2009	-20.75%	-27.91%	7.16%
2010	16.85%	12.35%	4.51%
2011	28.06%	30.84%	-2.78%
2012	-0.40%	-1.31%	0.90%
2013	26.57%	19.31%	7.26%
2014	24.10%	24.36%	-0.27%
2015	2.89%	3.60%	-0.71%
2016	-2.89%	-0.08%	-2.81%
2017	22.50%	18.96%	3.54%
2018	12.75%	12.50%	0.25%

SDRS Internal Global Equity Over/Under Performance Chart



* Equity - Composite History

1973 - 1991 is domestic equity only

1992 - 2004 is a combined domestic and international composite

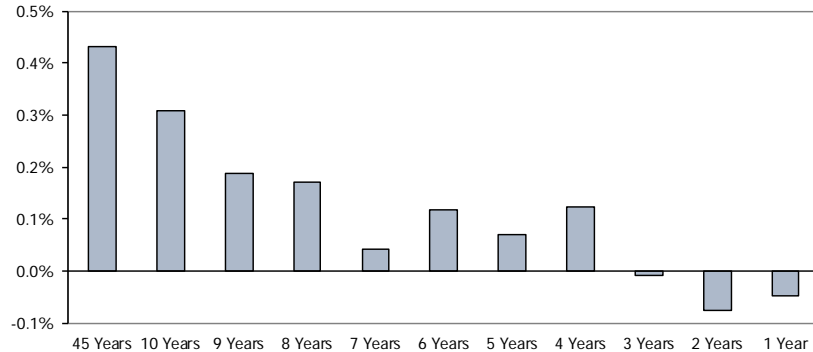
2005 - 2018 is global equity (small/mid, gem and high quality not included)

Investment Grade Fixed Income Return Comparison

Annualized

	<u>SDRS</u> <u>Fixed Income</u>	<u>Fixed Income</u> <u>Benchmark</u>	<u>Over/Under</u> <u>Performance</u>
45 Years	7.84%	7.40%	0.43%
10 Years	4.18%	3.87%	0.31%
9 Years	3.78%	3.59%	0.19%
8 Years	2.88%	2.71%	0.17%
7 Years	2.61%	2.57%	0.04%
6 Years	1.89%	1.77%	0.12%
5 Years	2.33%	2.26%	0.07%
4 Years	1.87%	1.75%	0.12%
3 Years	1.70%	1.71%	-0.01%
2 Years	-0.44%	-0.36%	-0.08%
1 Year	-0.49%	-0.45%	-0.05%

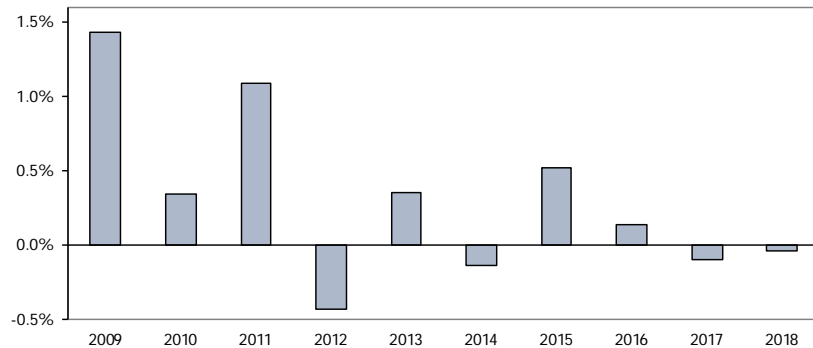
SDRS Fixed Income Over/Under Performance Chart



Annual Returns

	<u>SDRS</u> <u>Fixed Income</u>	<u>Fixed Income</u> <u>Benchmark</u>	<u>Over/Under</u> <u>Performance</u>
2009	7.80%	6.37%	1.43%
2010	11.32%	10.98%	0.34%
2011	4.74%	3.66%	1.08%
2012	7.07%	7.51%	-0.44%
2013	-0.30%	-0.65%	0.35%
2014	4.20%	4.34%	-0.14%
2015	2.38%	1.87%	0.51%
2016	6.12%	5.98%	0.14%
2017	-0.39%	-0.28%	-0.11%
2018	-0.49%	-0.45%	-0.05%

SDRS Fixed Income Over/Under Performance Chart



* Fixed Income - History

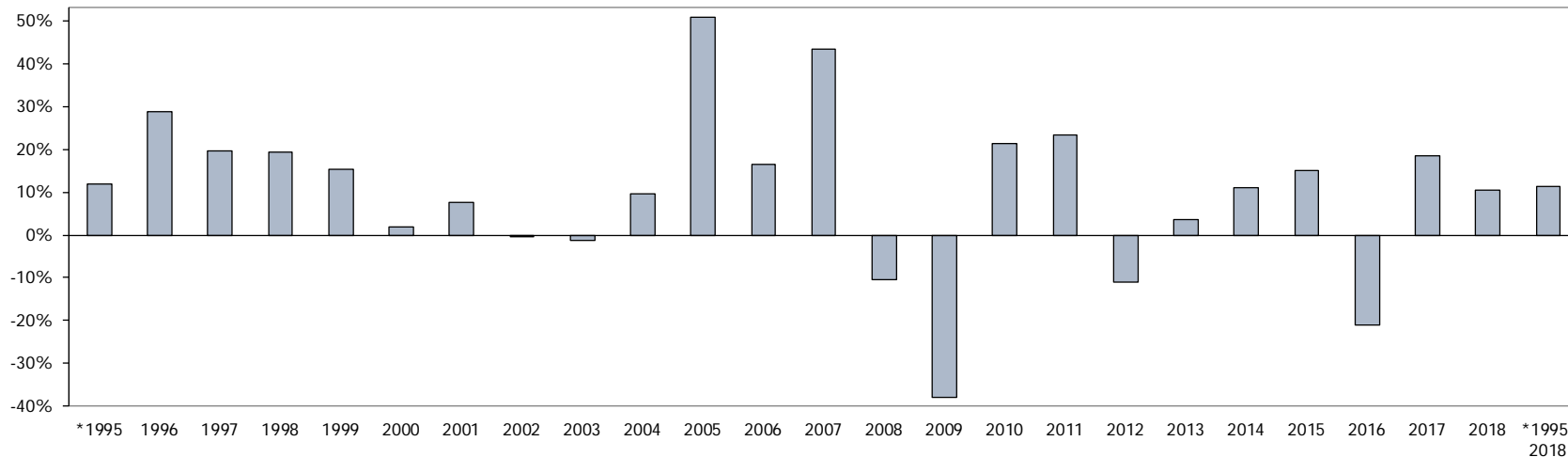
1973 - 2006 is investment grade & high yield managed together

2007 - 2010 is 80% investment grade portfolio + 20% high yield portfolio

2011 - 2018 is investment grade portfolio only

Real Estate Net Internal Rate of Return Comparison

Real Estate Net Internal Rate of Return Over/Under Performance Chart



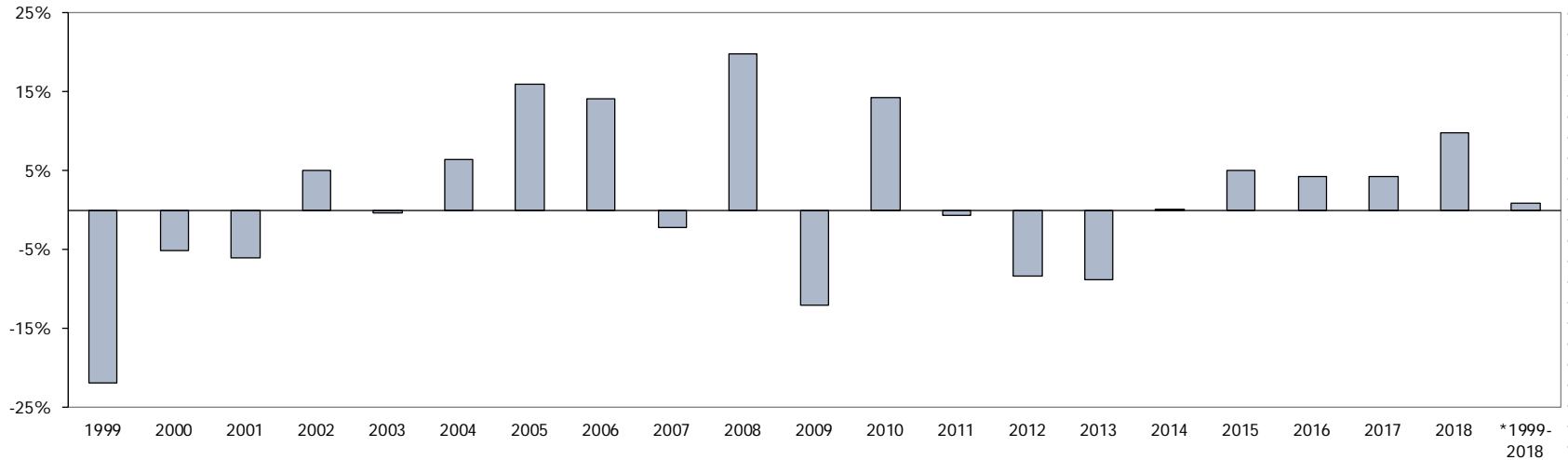
Fiscal Year	Real Estate	Benchmark	Over/Under Performance
*1995	16.39%	4.55%	11.84%
1996	38.28%	9.55%	28.73%
1997	30.89%	11.39%	19.50%
1998	37.21%	17.94%	19.27%
1999	28.47%	13.20%	15.27%
2000	13.37%	11.61%	1.76%
2001	20.07%	12.40%	7.67%
2002	6.37%	6.57%	-0.20%
2003	5.74%	7.09%	-1.35%
2004	19.41%	9.72%	9.69%
2005	66.40%	15.55%	50.85%
2006	36.70%	20.19%	16.51%

Fiscal Year	Real Estate	Benchmark	Over/Under Performance
2007	60.01%	16.60%	43.41%
2008	3.15%	13.58%	-10.43%
2009	-52.49%	-14.67%	-37.82%
2010	11.70%	-9.59%	21.30%
2011	40.88%	17.47%	23.41%
2012	3.72%	14.82%	-11.10%
2013	15.37%	11.90%	3.47%
2014	24.35%	13.38%	10.97%
2015	18.90%	3.93%	14.97%
2016	3.16%	24.10%	-20.94%
2017	16.78%	-1.82%	18.60%
2018	14.10%	3.57%	10.53%
*1995-2018	20.85%	9.55%	11.30%

* Blackstone I - funded December 1994

Private Equity Net Internal Rate of Return Comparison

Private Equity Net Internal Rate of Return Over/Under Performance Chart



Fiscal Year	Private Equity	Benchmark	Over/Under Performance	Fiscal Year	Private Equity	Benchmark	Over/Under Performance
1999	5.91%	27.87%	-21.96%	2009	-35.44%	-23.36%	-12.08%
2000	9.54%	14.71%	-5.17%	2010	32.68%	18.37%	14.31%
2001	-16.43%	-10.43%	-6.00%	2011	32.26%	32.85%	-0.59%
2002	-9.70%	-14.80%	5.11%	2012	-0.97%	7.29%	-8.26%
2003	4.21%	4.55%	-0.34%	2013	13.86%	22.63%	-8.77%
2004	30.00%	23.54%	6.46%	2014	24.79%	24.61%	0.18%
2005	25.95%	10.02%	15.93%	2015	7.82%	2.78%	5.04%
2006	26.51%	12.40%	14.11%	2016	2.57%	-1.68%	4.25%
2007	22.56%	24.67%	-2.11%	2017	22.57%	18.31%	4.26%
2008	9.94%	-9.92%	19.86%	2018	21.59%	11.78%	9.81%
				*1999-2018	9.54%	8.70%	0.84%

*Private Equity return is since inception. Cypress I - funded November 1995, Private Equity was not added to the Capital Markets Benchmark until FY 1999.