



New York City  
Board of Education Retirement System  
Performance Overview as of June 30, 2016

# Total Fund Overview

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**New York City  
Board of Education Retirement System**

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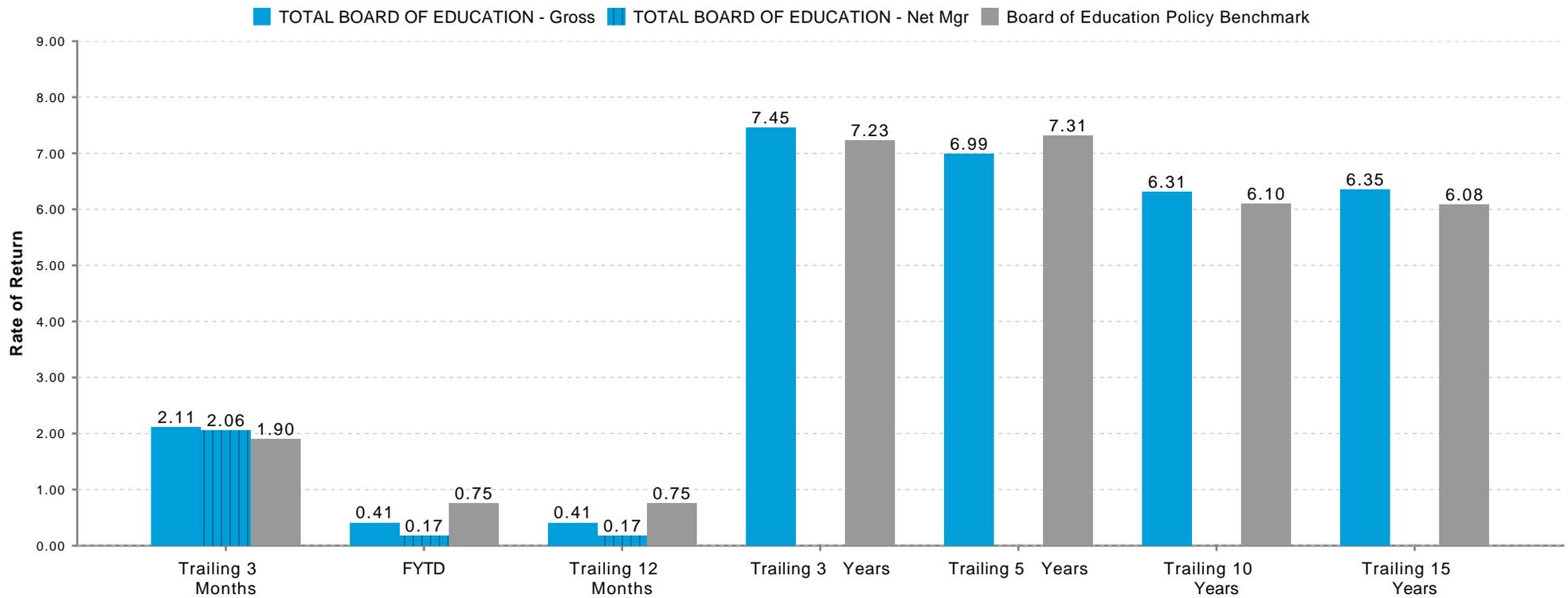
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**Market Value (Billions)**

\$4.5

TOTAL BOARD OF EDUCATION



	Plan 3 Years	Benchmark 3 Years	Plan 5 Years	Benchmark 5 Years	Plan 10 Years	Benchmark 10 Years
<b>Standard Deviation</b>						
TOTAL BOARD OF EDUCATION	8.0	7.6	7.0	8.8	11.3	11.7

## New York City Board of Education Retirement System (BERS)

### Consultant's Commentary – Through June 30, 2016

#### Total Fund Performance

The Board of Education Retirement System (BERS) Total Fund returned +2.06% net of fees for the quarter ended June 30, 2016 versus the policy benchmark's return of +1.90%. For the fiscal year as of June 30, 2016, the Total Fund returned +.17% net versus the benchmark return of +.75%. For the quarter and the fiscal year, the total domestic fixed income return outperformed the U.S. and non-U.S. public equity returns. Active equity and fixed income managers did not add the margin of outperformance that we expected in either the quarter or the fiscal year. While Private Equity and Real Assets did well for the fund, their allocation is not large enough to offset the underperformance elsewhere.

#### Total Fund Asset Allocation

As of June 30, 2016, the BERS Total Fund had \$4.50 billion, up from \$4.38 billion at March 2016. BERS plan allocations are within policy ranges. In the quarter and the fiscal year, the allocation to U.S. and non-U.S. stocks were a drag on performance.

#### Active U.S. Equity Commentary

As of June 30, 2016, U.S. Equity was \$1.69 billion (37.7%) of the NYBERS Total Fund. The U.S. equity composite was positive in the second quarter returning +2.50%. This performance slightly lagged the R3000 index return of +2.63%. Wellington Mid-Cap and the Emerging Manager programs underperformed in the quarter and fiscal year.

#### Active US Equity Managers

- **Wellington** returned +2.57% in the quarter versus +3.99% for S&P Midcap 400 index. For the fiscal year as of June 30, 2016, Wellington returned -1.01% versus +1.33% for the S&P Midcap 400 index.
- The primary drag on performance was overweight to industrials and underweights to financials, consumer staples, and materials, although stock selection in industrials and consumer discretionary also detracted. Security selection within the energy sector was the strongest contributor.

Through June 30, 2016



- Robert Half International and two airline holdings, Alaska Air Group and JetBlue Airways, were the leading detractors within the industrial sector.
- The largest contributor was Zillow, the on-line real estate listing company, which was up almost +50%.

### *International Equity Commentary*

As of June 30, 2016, Developed International Equity was \$716.8 million (15.9%) of the NYBERS Total Fund. Non-U.S. stocks returned -.38% in the second quarter versus -1.62% for the MSCI EAFE. The vote by England to exit the UK caused market uncertainty as did the continued weak economic performance in Europe and Japan. Developed International is one of the most important diversification allocations for expected improvement in the long term, however the last two years of returns have been detrimental to total fund performance.

### *Active International Equity Managers*

- **Sprucegrove** returned -.30% in the quarter versus -2.79% for the MSCI EAFE Value, net index. For the fiscal year as of June 30, 2016, Sprucegrove returned -10.69% versus -15.43% for the MSCI EAFE Value, net index.
- The Fund continues to represent high quality with a projected ROE of +14.6%, which is higher than the EAFE index at +11.0% and financial leverage of 2.2x, which is below the EAFE index at 2.7x. The Fund at a normalized P/E of 11.6x, 1.8x P/B and a 3.4% dividend yield is attractively valued.
- Sprucegrove had struggled for more than a year, experiencing some staff turnover and an unusual period of relative underperformance. Segal Rogerscasey research visited them and issued a positive research report on the staff, process and performance. While performance is improving, the firm needs continued outperformance to regain their margin over the benchmark net of fees.
- Some of the biggest headwinds to absolute and relative performance in 2015 have proved to be some of the biggest tailwinds to performance in 2016 to date. These would include the Fund's exposure to Energy, Materials and Emerging Markets.

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Through June 30, 2016



- During the second quarter, there were no new holdings added to the Fund. There were two eliminations: MISC (Malaysia/Industrials) and Takeda Pharmaceutical (Japan/Health Care).
- The top 10 holdings represent 26.1% of the portfolio.
  
- **Baillie Gifford** returned -.42% in the quarter versus -.15% for the MSCI EAFE Growth, net index. For the fiscal year as of June 30, 2016, Baillie Gifford returned -13.47% versus -4.80% for the MSCI EAFE Growth, net Index.
- Inditex, an international clothing retailer, was the portfolio's largest holding at 5.6%.
- At quarter end, the portfolio had 14.9% invested in emerging markets.
- The top 10 holdings represent 38.9% of the portfolio.
  
- **Acadian** outperformed for the quarter, -.55% versus -2.79% for the S&P EPAC Small Cap Index. Acadian also outperformed for the fiscal year as of June 30, 2016, -.37% versus -4.76% for the S&P EPAC Small Cap Index.
- Gains realized from stock selection were joined with value added from country allocations. Key sources of positive active return included a combination of stock selection and an underweight position in the U.K., an opportunistic exposure to Canada, and an overweight position in Japan. Less successful investments included a combination of stock selection and an underweight position in Australia, an opportunistic exposure to Mexico, and stock selection in Denmark.
- At quarter end, the portfolio's emerging markets exposure was 8.2%. The portfolio held 952 stocks.

### **Emerging Markets Equity Commentary**

As of June 30, 2016, Emerging Markets Equity was \$226.1 million (5.0%) of the NYBERS Total Fund. Emerging Markets underperformed for the quarter, +.34% versus +.66% for the MSCI Emerging Markets, net Index. Emerging Markets also underperformed for the fiscal year as of June 30,

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2016, -14.24% versus -12.05% for the MSCI Emerging Markets, net Index. BERS has one active manager in Emerging Markets, Acadian, and their returns underperformed the index.

### **Emerging Markets Equity Managers**

- **Acadian** underperformed for the quarter, +.34% versus +.66% for the MSCI Emerging Markets, net Index. Acadian also underperformed for the fiscal year as of June 30, 2016, -14.24% versus -12.05% for the MSCI Emerging Markets, net Index.
- Losses realized from stock selection were joined with value lost from country allocations. Key sources of negative active return included stock selection in Taiwan and South Africa, along with a combination of stock selection and an overweight position in Turkey. A combination of stock selection and underweight positions in China and Mexico helped to mitigate these losses, as did stock selection in Indonesia.
- The quantitatively managed portfolio held 407 stocks as of quarter end, compared to 836 for the benchmark. While not specifically a value equity style portfolio, it exhibited many such characteristics including lower valuation metrics versus benchmark (P/E of 10.2x versus 13.6x).
- The market capitalization was tilted smaller compared to the benchmark with a weighted average of \$41.9 billion compared to \$50.6 billion for the benchmark.

### **Fixed Income – Structured Manager Composite Commentary**

As of June 30, 2016, The Total Structured Portfolio was \$685.6 million (15.3%) of the NYBERS Total Fund. Structured Fixed Income returned +2.72% in the first quarter vs. +2.71% for the benchmark. Bond returns for the quarter and fiscal year have been above expectations as interest rates have declined to historic lows.

### **Fixed Income – Structured Manager Composite Managers**

- **BlackRock (mortgages)** returned +1.29% in the quarter, outperforming the Citigroup Mortgage index return of +1.07%. For the fiscal year as of June 30, 2016, BlackRock (Mortgages) returned +4.42% versus +4.29% for the Citigroup Mortgage index.

Through June 30, 2016



- Continuing a theme established late in Q1 2016, the Agency mortgage basis traded with very little volatility through the early weeks of June as rates remained range bound.
- **Prudential (credit)** returned +3.39% in the quarter, in line with the Investment Grade Credit index return of +3.42%. For the fiscal year as of June 30, 2016, Prudential (credit) returned +7.78% versus +7.26% for the Investment Grade Credit index.
- **PRIVEST (credit)** returned +3.07% in the quarter versus +3.42% for the Investment Grade Credit index. For the fiscal year as of June 30, 2016, PRIVEST (credit) returned +5.86% versus +7.26% for the Investment Grade Credit index.
- Privest (credit) was successful in helping negotiate a scheduled prepayment in May of a large Energy Watch List credit which in addition to both absolute and relative spread tightening, contributed to the outperformance during the quarter.
- Quarterly credit migration included four issuer upgrades (\$48.6 million market value) and seventeen issuer downgrades (\$354.1 million market value).
- PRIVEST (credit) committed to purchase \$331.3 million of private placements during the quarter at a weighted average spread, coupon, credit quality and average life of 269 basis points, 4.32%, BBB, and 9.58 years, respectively.
- **SSgA (governments)** returned +3.95% in the quarter, in line with the +3.96% return for its NYC - Treasury Agency plus five index benchmark. For the fiscal year as of June 30, 2016, SSgA (governments) returned +11.88% versus +11.98% for the NYC - Treasury Agency plus five index.
- Positive factors to performance this quarter was overweight to U.S. Agency debt versus Treasuries as spreads remain firm on limited issuance. The long TIPs breakeven position again ended the quarter flat with limited volatility across the curve. As a result of the weak payrolls report in the U.S. and the 'leave vote' in the UK referendum vote, the subsequent sharp rally in yields caused this quarter's underperformance.

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- **Taplin, Canida & Habacht** returned +3.86% in the quarter versus +3.42% for the Investment Grade Credit index. For the fiscal year as of June 30, 2016, Taplin, Canida & Habacht returned +5.47% versus +7.26% for the Investment Grade Credit index.
- Security selection, which had detracted from performance during those periods, was additive, particularly early in the quarter, as mispriced securities continued to recover. Credit spreads recovered sharply in April and ended tighter for the second quarter, demonstrating just how detached from fundamentals spreads had become in the second half of last year through February.
- The portfolio's overweight position in lower quality investment grade added to performance. For the quarter, BBB rated securities outperformed AAA, AA and A rated securities by 166, 114 and 121 basis points of excess return, respectively. By sector, the overweight to industrials enhanced returns as that was the top performing credit sector, adding 126 basis points of excess returns. In particular, commodity related sectors (energy and metals & miners), which had detracted from performance in the second half of 2015, outperformed as commodity markets continued to stabilize.
- Term-structure positioning had a positive impact on relative returns and contributed to strong absolute returns as 10-year U.S. Treasury yields declined to +1.47% from +1.77% at the end of March and the yield curve flattened. The 10-year Treasury yield closed June at the lowest level since July 2012. The overweight to long credit was beneficial for the quarter, as long credit (+6.65%) outperformed intermediate credit (+2.12%) by 93 basis point on a duration adjusted basis.

### **Enhanced Yield Fixed Income & Bank Loans Commentary**

As of June 30, 2016, Enhanced Yield Fixed Income & Bank Loans was \$344.5 million (7.7%) of the NYBERS Total Fund.

### **Enhanced Yield Fixed Income & Bank Loans Managers**

- **Loomis Sayles** returned +8.01% in the quarter versus +5.88% for the Merrill Lynch High Yield Master II Index. For the fiscal year as of June 30, 2016, Loomis Sayles returned -.21% versus +1.71% for the Merrill Lynch High Yield Master II Index.
- Strong performance in high yield was sustained throughout the second quarter as oil prices continued to rise and eventually stabilized in the latter half of the quarter. The late quarter Brexit vote diminished some of the established gains as the UK voted, by a narrow margin, to exit the European Union. Shaken by results that were not fully priced in, markets retreated initially while later recovering in recognition of the lack of clarity surrounding the UK exit as well as the fairly long expected timeframe for resolution.

- High yield industrials continued the rally started last quarter as recovering oil prices supported the sector through the end of the second quarter. Troubled names from the oil selloff benefited most in this space. Security selection combined with longer-than-bench duration positioning in the sector were key contributors to excess return.
- Energy names within an out-of-benchmark allocation to convertibles contributed meaningfully to excess performance.
- **Shenkman** returned +2.71% in the quarter, underperforming the +4.97% return for its Citigroup BB&B index benchmark. For the fiscal year as of June 30, 2016, Shenkman returned -.22% versus +.83% for the Citigroup BB&B index.
- High yield posted sharp gains in the second quarter driven by a significant rally in commodity prices, increasingly accommodative global central bank policies, equity markets that hovered near their 52-week highs, and substantial worldwide demand for income generating assets in a low yield environment.
- Risk-on sentiment was a key driver of high yield returns as investors largely shrugged off the Brexit vote, instead choosing to focus on increased optimism from U.S. consumers, first quarter US GDP being revised upward to +1.1%, and prospects that the ECB would act aggressively to stabilize financial markets.
- The second quarter's primary market was heavily concentrated in refinancing activities, with +60.8% of the use of proceeds being used to extend balance sheet maturities and take advantage of historically low treasury rates that are hovering near their all-time nadir. New issue quality was generally high, as only +3.2% of issuance was triple-C rated. The default rate ended June at +3.56%, slightly higher than first quarter's default rate of +3.18%.

- **Babson** returned +2.82% during the quarter, slightly underperforming the +2.86% return of the Credit Suisse Leveraged Loan Index. For the fiscal year as of June 30, 2016, Babson returned +.20%, underperforming the +.93% return of the Credit Suisse Leveraged Loan Index.
- Performance in the global high yield markets was positive for the second quarter following the strong rally that began in the first quarter. Stable technical conditions, accommodative global central bank policies and improved commodity prices provided a favorable backdrop for positive returns heading into June.
- Macro-driven volatility returned at the end of the quarter, however, following the Brexit vote. Although the high yield markets were not immune to this volatility, the initial impact was moderate and high yield markets did not experience a broad-based, indiscriminate sell-off.
- Following the Brexit vote, the global high yield markets gave back some of the performance in the final week of trading, but still finished the quarter with positive returns. Performance was led by U.S. high yield bonds, which returned 5.52% for the quarter, and U.S. loans, which returned 2.86%. European high yield bonds and loans returned 1.75% and 1.35%, respectively.

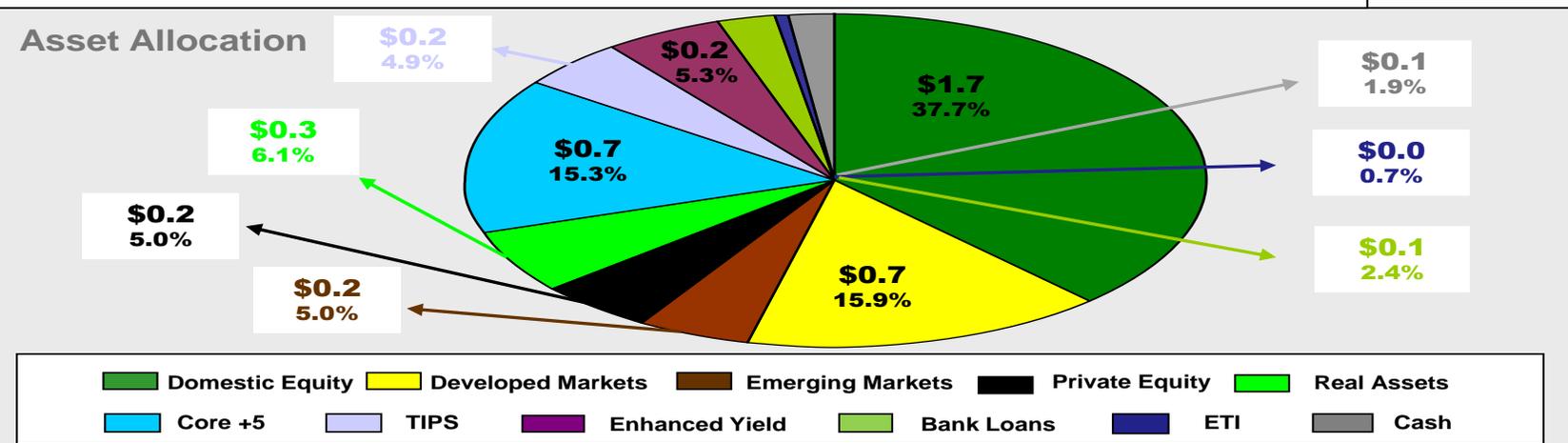
### **TIPS, ETI, Cash Commentary**

As of June 30, 2016, Fixed Income – TIPS, ETI and Cash was \$331.8 million (7.4%) of the NYBERS Total Fund.

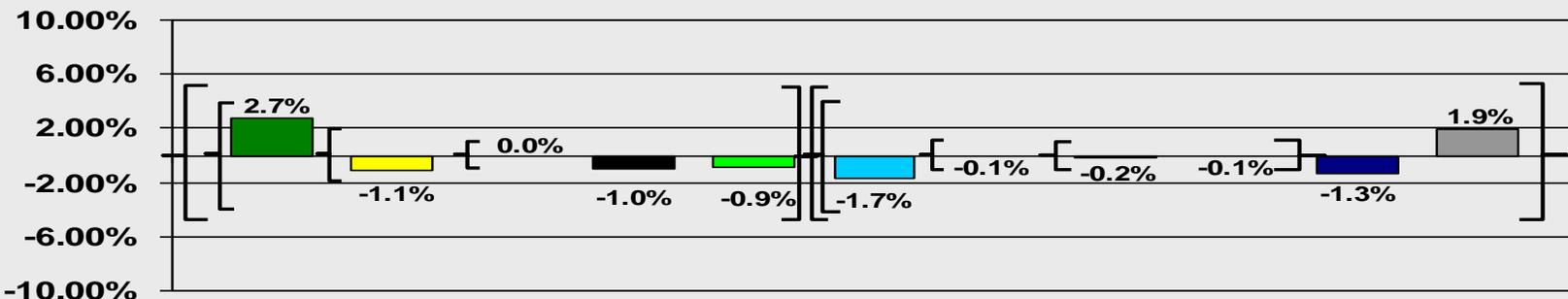
### **Fixed Income – TIPS Managers**

- **SSgA (TIPS)** returned +1.83% in the quarter, outperforming the +1.71% return for its Barclays Global Inflation Linked index. SSgA (TIPS) returned +4.43% for the fiscal year as of June 30, 2016, outperforming the +4.35% return for its Barclays Global Inflation Linked index.

**\$4.5B Under Management**

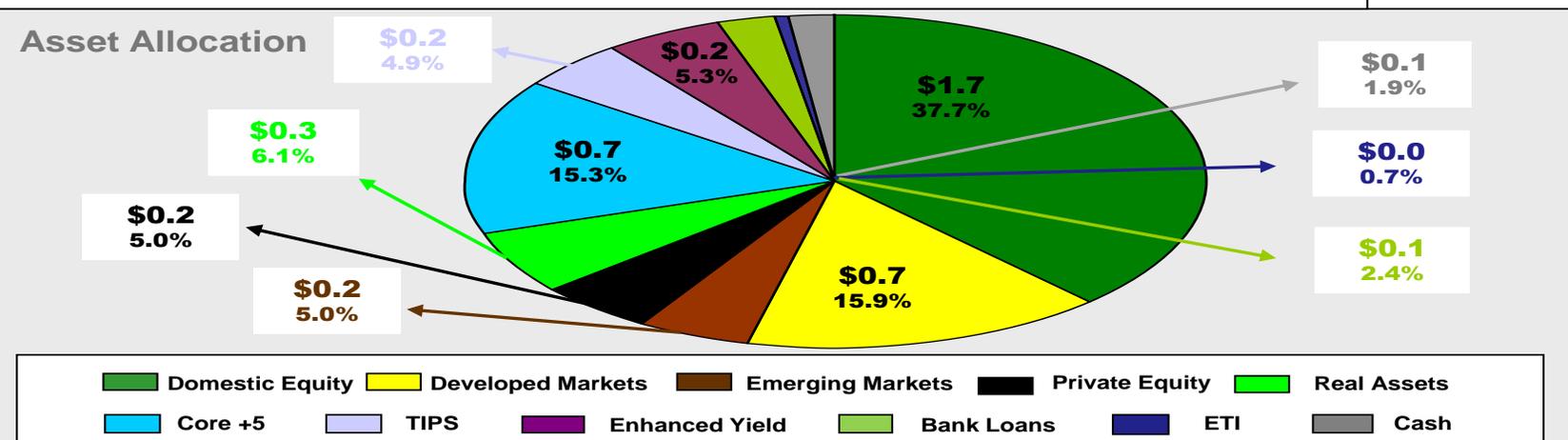


**Relative Mix to New Policy Weights**

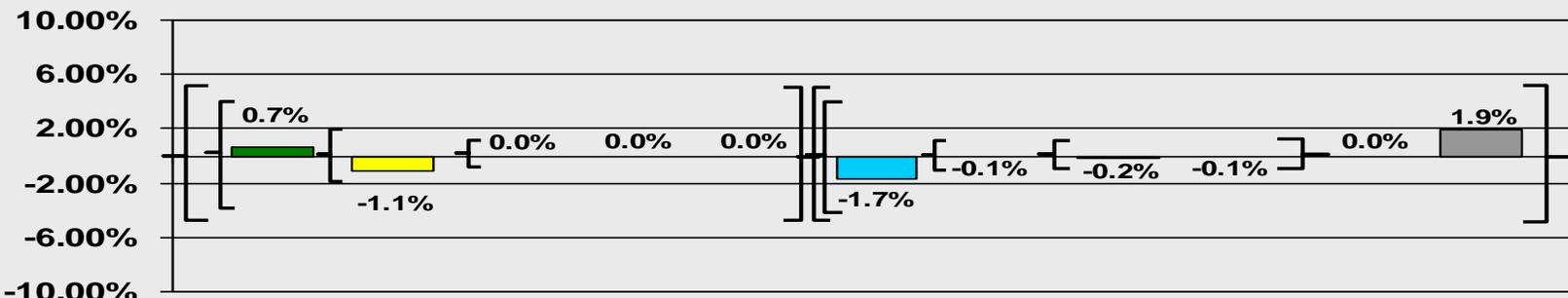


Note: Brackets represent rebalancing ranges versus Policy.

**\$4.5B Under Management**

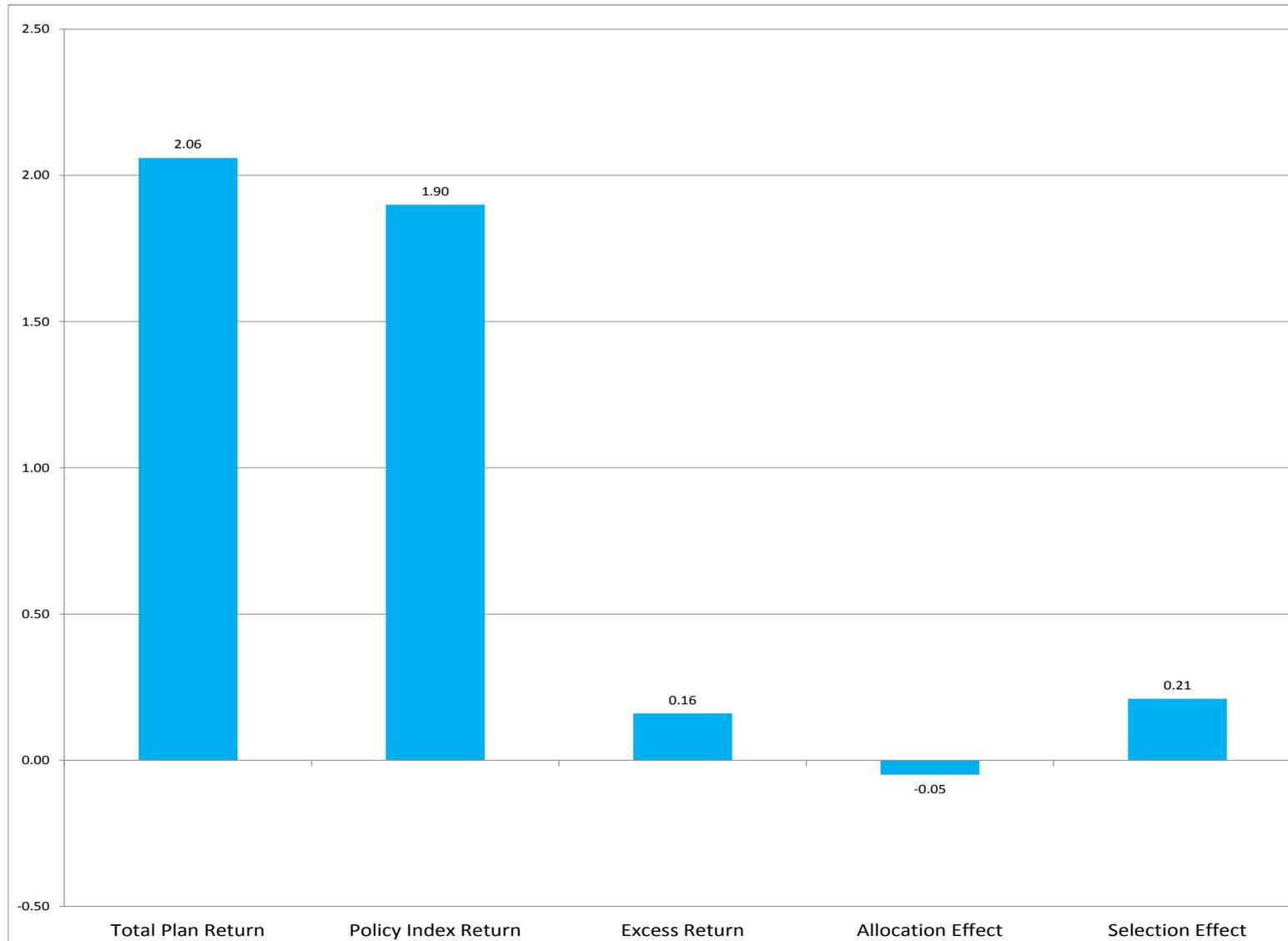


**Relative Mix to Adjusted New Policy Weights**

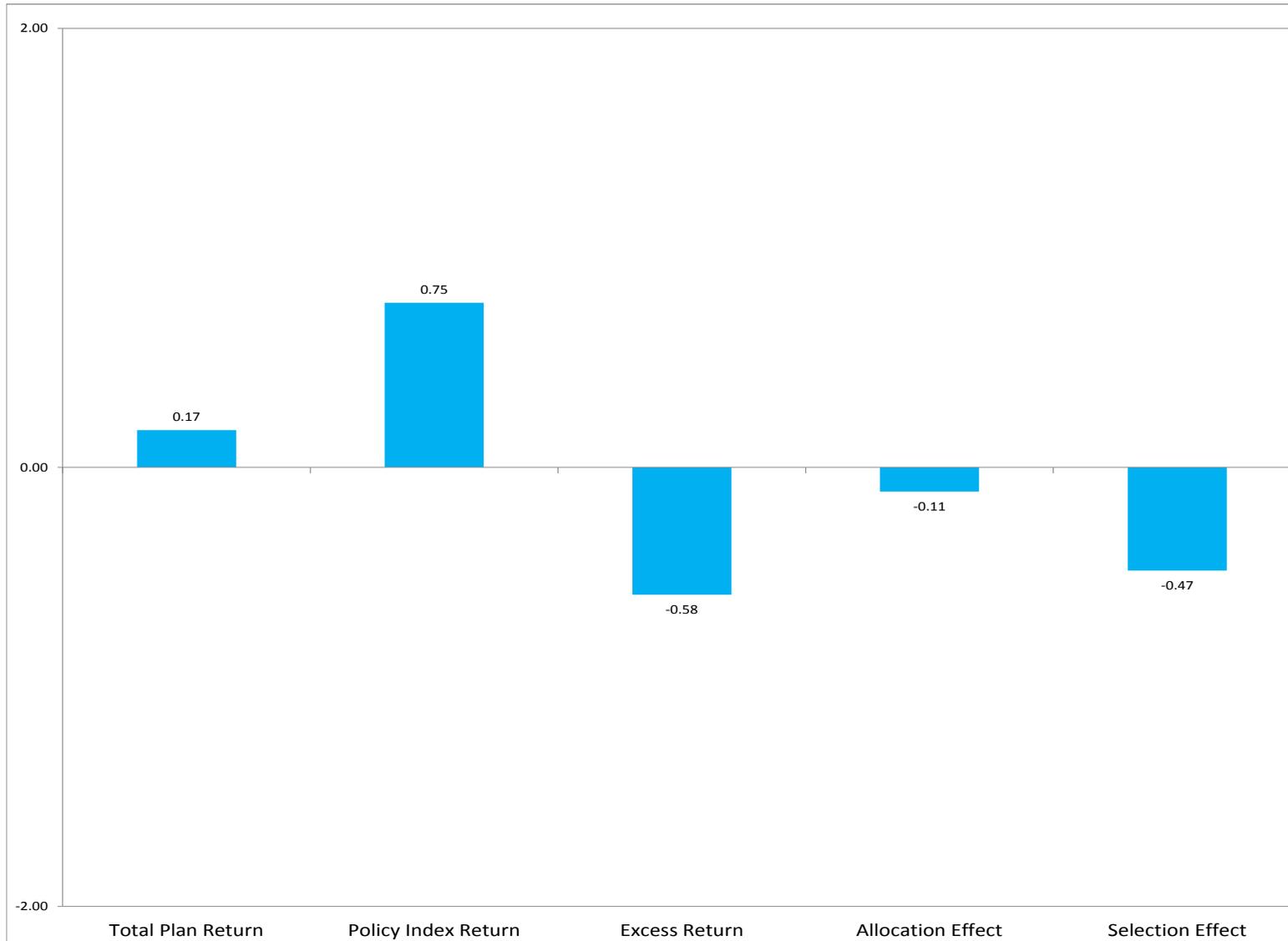


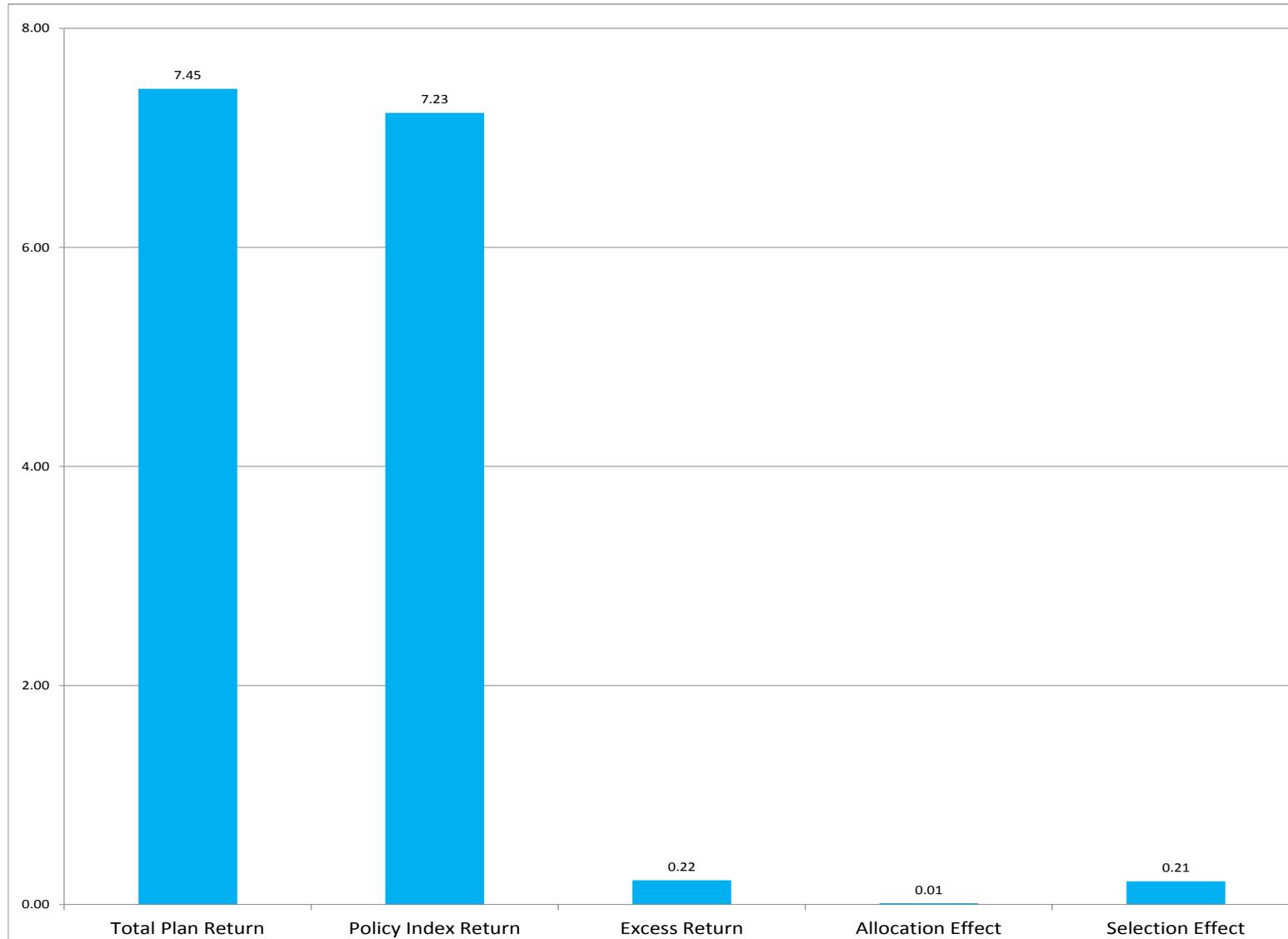
Note: Brackets represent rebalancing ranges versus Policy.

Note: On June 30, 2016 BERS' combined Fixed Income and Cash portfolios have a duration of 5.1 years. The duration of the Barclays US Aggregate Index was 5.5 years on that date.



# Performance Attribution: Total Plan - 12 Month Ending: June 30, 2016





<b>Allocation Effect - Asset Class Breakdown</b>				
	<u>Quarter</u>	<u>12 Months</u>	<u>3 Years*</u>	<u>Benchmark</u>
TOTAL BOARD OF EDUCATION	-0.05	-0.11	0.01	Board of Education Policy Benchmark
TOTAL DOMESTIC EQUITY	0.01	0.01	0.03	RUSSELL 3000
TOTAL DEVELOPED EQUITY	0.02	0.02	-0.01	MSCI EAFE NET
TOTAL EMERGING MARKETS	-0.01	0.01	-0.01	MSCI EMERGING MARKETS
TOTAL PRIVATE EQUITY	0.01	-0.01	0.00	NYC R3000 +3% Lagged
TOTAL PRIVATE REAL ESTATE	0.00	0.01	0.01	NCREIF NFI-ODCE NET + 1%
TOTAL INFRASTRUCTURE	0.00	0.00	0.00	CPI + 4%
TOTAL STRUCTURED	-0.02	-0.19	-0.01	NYC - CORE PLUS FIVE
TOTAL TIPS MANAGERS	0.00	-0.06	0.06	BARCLAYS U.S TIPS INDEX
TOTAL HIGH YIELD	-0.01	0.01	0.01	CITIGROUP BB & B
TOTAL BANK LOANS	0.00	0.00	0.01	CSFB LEVERAGED LOAN INDEX
TOTAL CASH	-0.03	0.07	-0.09	

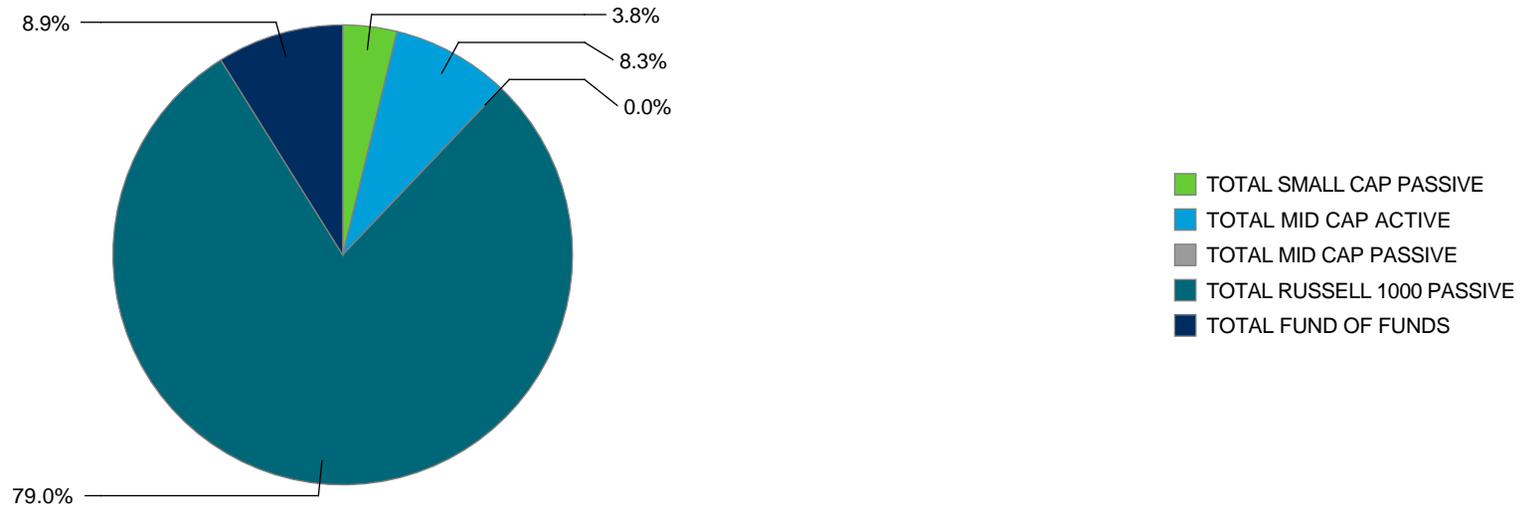
<b>Selection Effect - Asset Class Breakdown</b>				
	<u>Quarter</u>	<u>12 Months</u>	<u>3 Years*</u>	<u>Benchmark</u>
TOTAL BOARD OF EDUCATION	0.21	-0.47	0.21	Board of Education Policy Benchmark
TOTAL DOMESTIC EQUITY	-0.05	-0.33	-0.06	RUSSELL 3000
TOTAL DEVELOPED EQUITY	0.18	-0.14	0.07	MSCI EAFE NET
TOTAL EMERGING MARKETS	-0.02	-0.13	0.07	MSCI EMERGING MARKETS
TOTAL PRIVATE EQUITY	0.01	0.16	0.09	NYC R3000 +3% Lagged
TOTAL PRIVATE REAL ESTATE	0.06	0.09	0.02	NCREIF NFI-ODCE NET + 1%
TOTAL INFRASTRUCTURE	0.00	0.01	0.01	CPI + 4%
TOTAL STRUCTURED	0.00	-0.08	-0.01	NYC - CORE PLUS FIVE
TOTAL TIPS MANAGERS	0.01	0.00	0.01	BARCLAYS U.S TIPS INDEX
TOTAL HIGH YIELD	0.01	-0.06	0.02	CITIGROUP BB & B
TOTAL BANK LOANS	0.00	-0.02	0.00	CSFB LEVERAGED LOAN INDEX
TOTAL CASH	0.00	0.01	0.01	

\*Returns are Gross of Investment Advisory Fees

# Total Domestic Equity Asset Allocations: June 30, 2016



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL DOMESTIC EQUITY	\$1.7	37.7

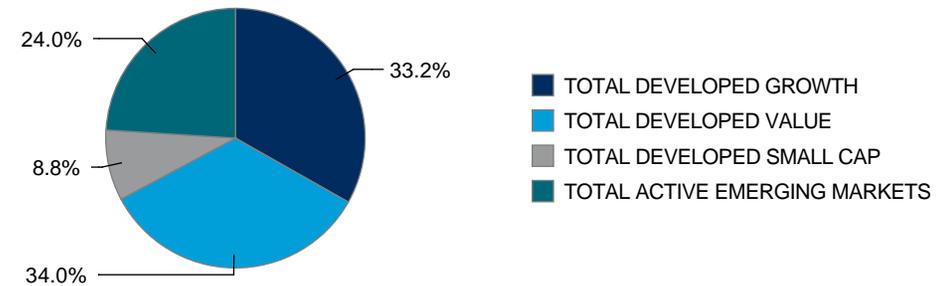
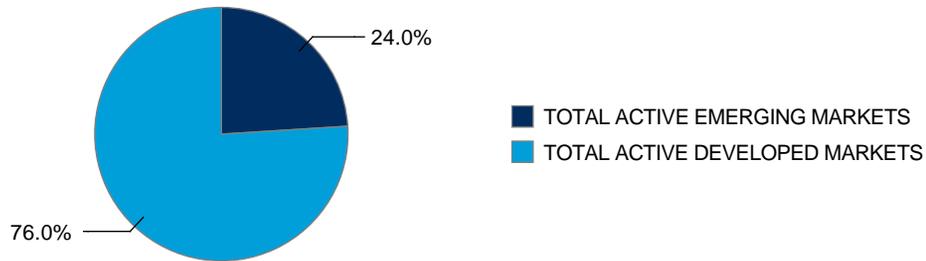


Sub Sector	Policy Weight	Actual Weight	Under/Over Weight	Index Return	Actual Return	Difference
TOTAL SMALL CAP ACTIVE	2.83	0.00	-2.83	3.79		-3.79
TOTAL SMALL CAP PASSIVE	5.39	3.84	-1.55	3.79	3.80	0.01
TOTAL MID CAP ACTIVE	7.25	8.32	1.07	3.18	2.72	-0.46
TOTAL MID CAP PASSIVE	3.75	0.00	-3.75	3.99		-3.99
TOTAL RUSSELL 1000 ACTIVE	11.25	0.00	-11.25	2.54		-2.54
TOTAL RUSSELL 1000 PASSIVE	62.03	78.95	16.92	2.54	2.59	0.06
TOTAL EMERGING MANAGERS	7.50	8.89	1.39	2.63	1.30	-1.33

# International Equity Asset Allocation: June 30, 2016



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL INTERNATIONAL EQUITY	\$942.9	21.0

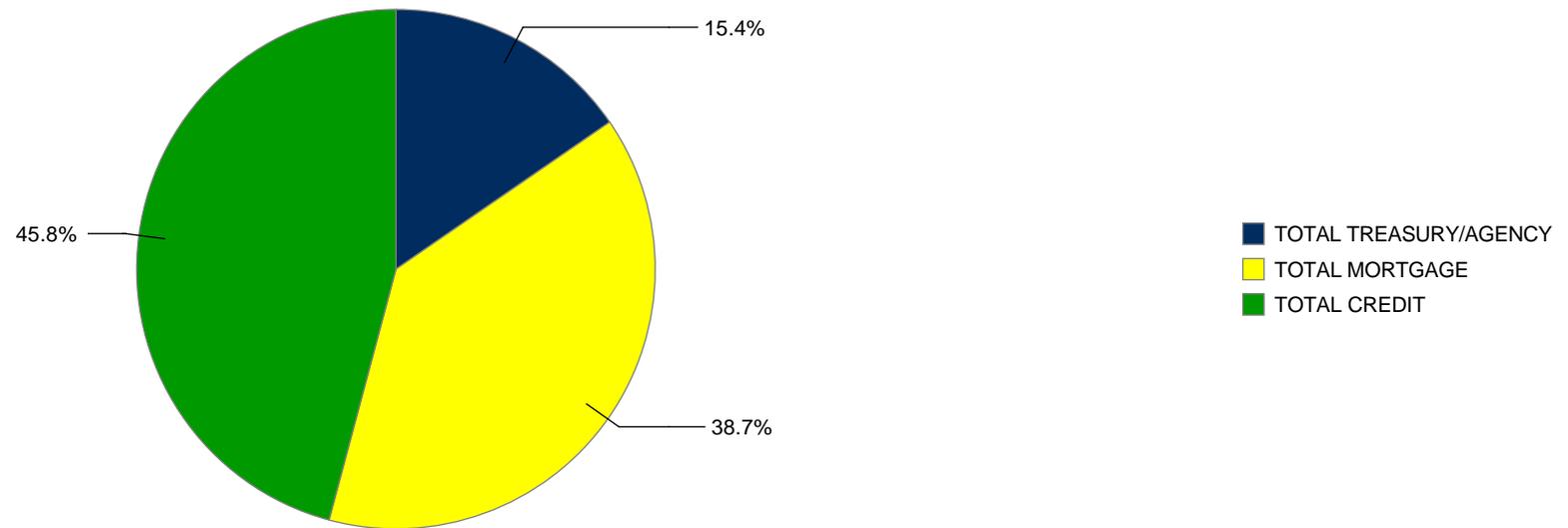


	<u>Asset Weight</u>	<u>Quarterly Returns - Fund and Benchmark</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL DEVELOPED GROWTH	33.24	(0.36)	(0.15)	(0.21)
TOTAL DEVELOPED VALUE	34.02	(0.25)	(2.79)	2.54
TOTAL DEVELOPED SMALL CAP	8.76	(0.47)	(2.79)	2.32
TOTAL ACTIVE EMERGING MARKETS	23.98	0.43	0.66	(0.23)
TOTAL INTERNATIONAL EQUITY	100.00	(0.14)	(0.64)	0.50

# Structured Fixed Income Asset Allocation: June 30, 2016



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL STRUCTURED	\$685.6	15.3

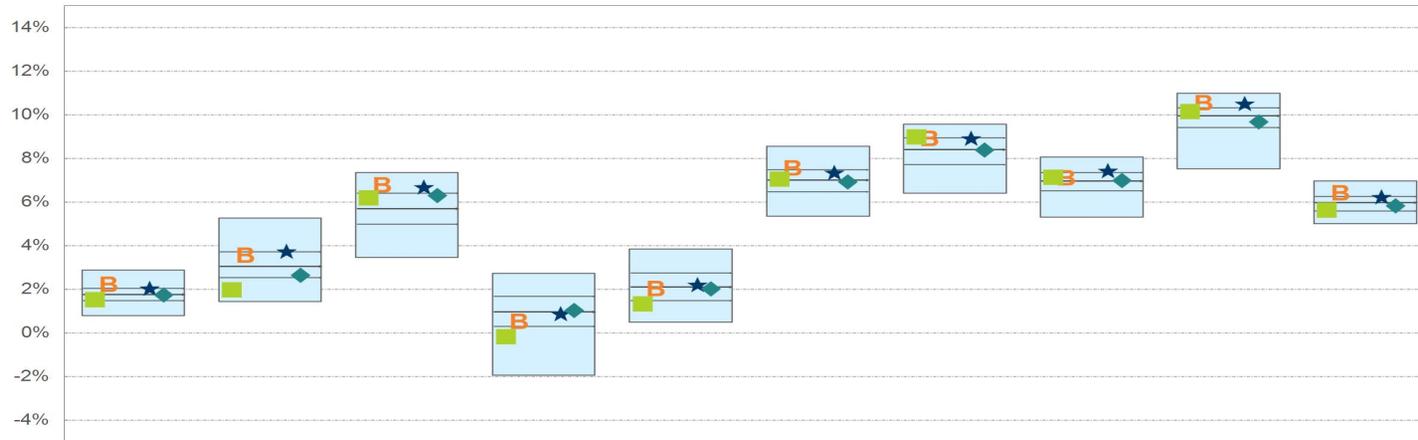


Sub Sector	Policy Weight	Actual Weight	Under/Over Weight	Index Return	Actual Return	Difference
TOTAL TREASURY/AGENCY	22.18	15.44	-6.74	3.96	3.96	0.01
TOTAL MORTGAGE	34.25	38.73	4.48	1.07	1.30	0.23
TOTAL INV GRADE CREDIT	43.57	45.83	2.26	3.42	3.57	0.14



### City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$1 Billion  
Cumulative Periods Ending : June 30, 2016



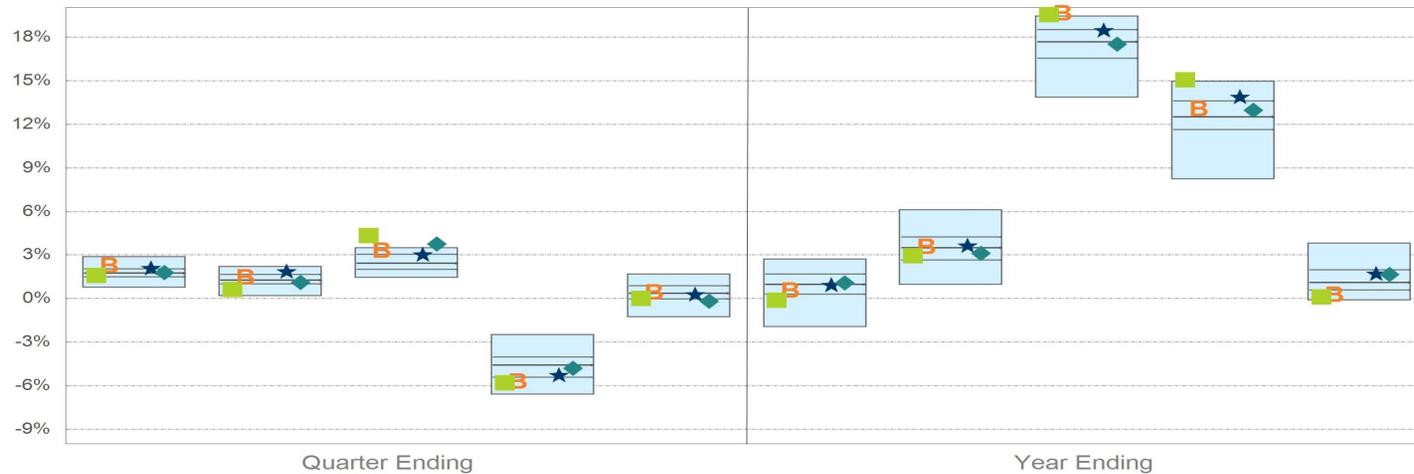
Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	2.87	5.27	7.36	2.73	3.85	8.56	9.57	8.06	10.99	6.96
25th	2.04	3.71	6.41	1.68	2.75	7.48	8.94	7.36	10.33	6.27
50th	1.77	3.05	5.70	0.97	2.11	7.02	8.42	6.96	9.96	5.98
75th	1.49	2.53	4.99	0.30	1.48	6.48	7.72	6.51	9.43	5.60
95th	0.79	1.44	3.47	-1.94	0.48	5.36	6.40	5.31	7.52	5.01
No. Of Obs	61	61	61	61	61	61	61	61	56	55
<b>B</b> Total System - BOE	2.11 (21)	3.44 (35)	6.67 (18)	0.41 (73)	1.90 (60)	7.45 (26)	8.79 (33)	6.99 (48)	10.43 (19)	6.31 (21)
<b>★</b> Board of Ed Policy Ben	1.90 (35)	3.61 (28)	6.57 (21)	0.75 (58)	2.09 (51)	7.23 (38)	8.81 (31)	7.31 (26)	10.40 (19)	6.10 (41)
<b>■</b> Public Mkt Equiv 25	1.40 (85)	1.84 (88)	6.07 (36)	-0.30 (83)	1.21 (88)	6.93 (50)	8.87 (28)	7.02 (45)	10.02 (46)	5.51 (82)
<b>◆</b> Public Mkt Equiv 35	1.60 (68)	2.52 (75)	6.17 (33)	0.89 (55)	1.89 (61)	6.80 (61)	8.26 (58)	6.86 (55)	9.56 (67)	5.69 (67)

Wilshire Trust Universe Comparison Service® (TUCS®)



### City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$1 Billion  
Consecutive Time Periods: June 30, 2016



Percentile Rankings	Jun 16	Mar 16	Dec 15	Sep 15	Jun 15	Jun 16	Jun 15	Jun 14	Jun 13	Jun 12
5th	2.87	2.20	3.50	-2.47	1.69	2.73	6.10	19.45	14.96	3.83
25th	2.04	1.65	3.06	-4.02	0.89	1.68	4.24	18.53	13.59	1.98
50th	1.77	1.28	2.44	-4.57	0.38	0.97	3.51	17.66	12.51	1.11
75th	1.49	1.02	2.02	-5.41	-0.01	0.30	2.66	16.55	11.63	0.60
95th	0.79	0.22	1.45	-6.57	-1.24	-1.94	0.98	13.85	8.25	-0.07
No. Of Obs	61	61	61	61	61	61	61	61	61	61
<b>B</b> Total System - BOE	2.11 (21)	1.30 (48)	3.13 (18)	-5.87 (87)	0.28 (61)	0.41 (73)	3.41 (51)	19.47 (4)	12.90 (41)	0.10 (92)
★ Board of Ed Policy Ben	1.90 (35)	1.68 (23)	2.85 (35)	-5.46 (75)	0.10 (66)	0.75 (58)	3.46 (50)	18.30 (33)	13.70 (23)	1.52 (36)
■ Public Mkt Equiv 25	1.40 (85)	0.44 (93)	4.15 (1)	-6.00 (88)	-0.17 (80)	-0.30 (83)	2.74 (71)	19.36 (5)	14.88 (5)	-0.08 (95)
◆ Public Mkt Equiv 35	1.60 (68)	0.91 (80)	3.56 (4)	-4.98 (65)	-0.38 (87)	0.89 (55)	2.91 (68)	17.33 (60)	12.76 (41)	1.46 (40)

# Actual and Estimated Fees

Through June 30, 2016



BERS RETIREMENT SYSTEM				
ACTUAL FEES FOR FISCAL YEAR ENDING JUNE 30, 2015 AND ESTIMATED FEES FOR FY 2016 UPDATED THROUGH SEPTEMBER 2015				
INVESTMENT STYLE (EQUITIES)	Actual 2015		Estimates 2016	
	MV 06-30-15 (\$MM)	Mgmt Fees in Basis Points	MV 09-30-15 (\$MM)	Mgmt in Basis Points
<b>US Equities</b>	<b>1,770</b>	<b>11.13</b>	<b>1,640</b>	<b>10.56</b>
Small Cap Active	33	56.41	-	-
Small Cap Growth	-	-	-	-
Small Cap Value	-	-	-	-
Small Cap core	33	56.41	-	-
Small Cap Fundamental Index	-	-	-	-
Small/Mid Cap Active	-	-	-	-
Small/Mid Cap Growth	-	-	-	-
Small/Mid Cap Value	-	-	-	-
Mid Cap Active	143	54.23	134	56.66
Mid Cap Growth	-	-	-	-
Mid Cap Value	-	-	-	-
Mid Cap core	143	54.23	134	56.66
Russell 1000 Active	-	-	-	-
Russell 1000 Fundamental Index	-	-	-	-
Active Emerging Managers (U.S. Equities)	162	58.39	146	62.57
Total US Active Equities	338	57.23	279	59.74
Total US Passive Equities	1,432	0.45	1,360	0.44
Environmental US E. Strategies	-	-	-	-
<b>International Equities</b>	<b>970</b>	<b>26.73</b>	<b>856</b>	<b>26.83</b>
Active EAFE Equities	752	24.27	667	24.53
Growth	361	24.99	306	26.03
Value	308	21.34	284	20.57
Core	-	0.00	-	-
Small Cap	83	32.01	77	33.16
Non-US Environmental Strategies	-	-	-	-
Active Emerging Markets	218	35.24	189	34.97
Total Int'l Active Equities	970	26.73	856	26.83
Total Int'l Passive Equities	-	-	-	-
<b>REITS Passive Index</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

Information provided by the New York City Comptroller

# Actual and Estimated Fees

Through June 30, 2016



BERS RETIREMENT SYSTEM				
ACTUAL FEES FOR FISCAL YEAR ENDING JUNE 30, 2015 AND				
ESTIMATED FEES FOR FY 2016 UPDATED THROUGH SEPTEMBER 2015				
	Actual 2015		Estimates 2016	
INVESTMENT STYLE (FIXED INCOME)	MV 06-30-15 (\$MM)	Mgmt Fees in Basis Points	MV 09-30-15 (\$MM)	Mgmt in Basis Points
<b>Fixed Income</b>	<b>1,292</b>	<b>11.52</b>	<b>1,260</b>	<b>11.40</b>
Structured Program	643	6.11	649	5.78
Government Sector	95	4.70	98	4.49
Mortgage Sector	254	6.17	257	4.32
Investment Grade Credit Sector	294	6.51	294	7.48
Global Fixed Income	-	-	-	-
Progress Fixed Emerging Managers	-	-	-	-
TIPS	139	1.29	138	0.50
Active TIPS	-	0.00	-	-
Passive TIPS	139	0.34	138	0.50
Opportunistic Fixed Income	-	-	-	-
Enhanced Yield	217	32.93	206	33.57
Bank Loans	86	34.05	85	34.57
Convertible Bonds	-	-	-	-
ETI - Access - RBC	7	24.06	7	22.65
ETI - AFL-CIO HIT	12	42.51	12	42.64
<b>Total Public Markets (Externally managed)</b>	<b>3,845</b>	<b>15.74</b>	<b>3,593</b>	<b>15.21</b>
Other ETI Programs	5	-	6	-
In-House Short Term	182	0.00	157	0.00
<b>Total Public Markets</b>	<b>4,032</b>	<b>15.01</b>	<b>3,756</b>	<b>14.55</b>
<b>INVESTMENT STYLE (PRIVATE)</b>				
<b>Hedge Funds</b>	-	-	-	-
<b>Private Equities</b>	<b>152</b>	<b>106.79</b>	<b>196</b>	<b>162.71</b> <sup>1</sup>
<b>Real Assets</b>	<b>184</b>	<b>91.35</b>	<b>192</b>	<b>109.98</b> <sup>1</sup>
Private Real Estate	162	89.30	169	96.96
Infrastructure	22	70.77	24	88.74
Opportunistic Fixed Income	-	-	-	-
<b>Total Private Markets</b>	<b>336</b>	<b>87.86</b>	<b>388</b>	<b>136.63</b> <sup>3</sup>
<b>Total Overall</b>	<b>4,368</b>	<b>21.42</b>	<b>4,144</b>	<b>25.99</b> <sup>4</sup>
<b>Footnotes</b>				
1 - Private Equity & Real Assets Investments exclude GP CARRY & Incentive Fees .				
2 - Infrastructure Fees are based on committed Amounts for each investment which are higher than the actual Market Values.				
3- Private Equity and Private Real Estate fees are based on Invested values and committed amounts depending on the age of the investment.				
4- The Incentive Fees paid for the Police Fund in 2015 are 1.94 BPS.				

Information provided by the New York City Comptroller

# Securities Lending Income

Through June 30, 2016



## NYC BOARD OF EDUCATION RETIREMENT SYSTEM SECURITIES LENDING INCOME June 30, 2016

	U.S. <u>FIXED INCOME</u>	U.S. <u>EQUITY</u>	<u>INTERNATIONAL EQUITY</u>	
1989*	\$70,000	--	--	
1990	79,000	--	--	
1991	111,000	--	--	
1992	122,000	\$11,000	--	
1993	79,000	32,000	\$15,000	
1994	93,000	77,000	20,000	
1995	112,000	93,000	12,000	
1996	99,000	76,000	27,000	
1997	101,000	126,000	40,000	
1998	111,000	170,000	60,000	
1999	159,000	263,000	100,000	
2000	193,000	310,000	97,000	
2001	295,000	208,000	159,000	
2002	209,000	143,000	152,000	
2003	153,000	158,000	195,000	
2004	226,000	255,000	174,000	
2005	384,000	479,000	217,000	
2006	303,000	734,000	246,000	
2007	593,000	1,208,000	272,000	
2008	2,514,000	2,266,000	451,000	
2009	698,000	1,416,000	367,000	
2010	246,000	729,000	326,000	
2011	340,000	943,000	599,000	
2012	516,000	1,144,000	495,000	
2013	349,000	1,325,000	446,000	
2014	287,000	512,000	1,387,000	
2015	338,000	429,000	1,985,000	
2016 (6 Months)	160,000	181,000	1,573,000	
Since Inception	<u>\$8,940,000</u>	<u>\$13,288,000</u>	<u>\$9,415,000</u>	*Inception 4/89

**New York City  
Board of Education Retirement System**

# **Appendix A**

## **Consolidated Performance Report**

# Consolidated Performance Report

Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014	2013	2012	2011	5 Year	10 Year	ITD	Inception Date	
<b>SYSTEM RETURN SUMMARY</b>															
5	BERS-TOTAL PORTFOLIO - GROSS	4,495	100.00	2.11	0.41	3.44	(0.20)	6.64	18.78	13.50	(0.42)	6.99	6.31	8.59	07/01/1987
	BERS - ESTIMATED INVESTMENT FEES			(0.04)	(0.24)	(0.11)	(0.24)	(0.25)							
	EST MANAGEMENT FEES - PUBLIC MARKET (ACCRUAL)			(0.03)	(0.14)	(0.07)	(0.14)	(0.15)							
	EST MANAGEMENT FEES - ALTERNATIVE MARKETS (CASH)			(0.01)	(0.10)	(0.04)	(0.10)	(0.10)							
	EST INCENTIVE FEES														
	EST OTHER FEES														
	EST FEE OFFSETS														
	BERS-TOTAL PORTFOLIO - NET MGR			2.06	0.17	3.33	(0.44)	6.39							
	BOARD OF EDUCATION POLICY BENCHMARK			1.90	0.75	3.61	(0.09)	6.93	18.10	14.05	0.47	7.31	6.10		
	EXCESS RETURN			0.16	(0.58)	(0.29)	(0.36)	(0.53)	0.68	(0.55)	(0.89)	(0.32)	0.21		
<b>EQUITY RETURN DETAIL</b>															
18	BERS-TOTAL EQUITY (INCLUDES PE & RA) - GROSS	3,133	69.70	1.76	(1.35)	2.37	(0.13)	7.08	27.83	16.72	(4.01)	8.12	6.31	8.69	08/01/1993
	ESTIMATED INVESTMENT FEES			(0.05)	(0.29)	(0.13)	(0.30)	(0.28)							
	EST MANAGEMENT FEES			(0.05)	(0.29)	(0.13)	(0.30)	(0.28)							
	EST INCENTIVE FEES														
	EST OTHER FEES														
	EST FEE OFFSETS														
	BERS-TOTAL EQUITY (INCL PE & RA) - NET MGR			1.71	(1.64)	2.24	(0.43)	6.81							
26	BERS-TOTAL DOMESTIC EQUITY - GROSS	1,693	37.67	2.53	1.37	3.31	0.51	11.27	35.96	16.62	(0.72)	11.23	7.35	9.41	09/01/1991
	ESTIMATED INVESTMENT FEES			(0.03)	(0.11)	(0.06)	(0.12)	(0.13)							
	BERS-TOTAL DOMESTIC EQUITY - NET MGR			2.50	1.26	3.25	0.39	11.14							
	RUSSELL 3000 (DAILY)			2.63	2.14	3.62	0.48	12.56	33.55	16.42	1.03	11.60	7.40	9.30	
	EXCESS RETURN			(0.13)	(0.88)	(0.37)	(0.09)	(1.42)	2.41	0.20	(1.75)	(0.36)	(0.05)	0.11	
36	BERS-TOTAL SMALL CAP - GROSS	65	1.45	3.80	(7.57)	2.19	(6.44)	3.20	44.74	19.91	(10.17)	6.78	4.72	5.62	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)	(0.08)	(0.15)							
	BERS-TOTAL SMALL CAP - NET MGR			3.80	(7.57)	2.19	(6.52)	3.05							
	RUSSELL 2000 (DAILY)			3.79	(6.73)	2.22	(4.41)	4.89	38.82	16.35	(4.18)	8.35	6.20	7.03	
	EXCESS RETURN			0.01	(0.84)	(0.03)	(2.11)	(1.85)	5.92	3.56	(5.99)	(1.57)	(1.47)	(1.41)	
46	BERS-TOTAL MID CAP - GROSS	141	3.13	2.72	(0.45)	3.11	2.56	10.77	37.52	19.12	(5.53)	11.14		13.28	10/01/2010
	ESTIMATED INVESTMENT FEES			(0.15)	(0.56)	(0.29)	(0.55)	(0.41)							
	BERS-TOTAL MID CAP - NET MGR			2.57	(1.01)	2.82	2.01	10.36							
	RUSSELL MIDCAP (DAILY)			3.18	0.56	5.50	(2.44)	13.22	34.76	17.28	(1.55)	10.90		13.31	
	EXCESS RETURN			(0.61)	(1.57)	(2.68)	4.45	(2.86)	2.76	1.84	(3.98)	0.24		(0.03)	

# Consolidated Performance Report

Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014	2013	2012	2011	5 Year	10 Year	ITD	Inception Date
<b>EQUITY RETURN DETAIL</b>														
58	BERS-TOTAL RUSSELL 1000 - GROSS	1,337	29.74	2.59	3.06	3.81	0.98	12.92	62.18	14.87	(1.64)	14.94	9.86	09/01/1993
	ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)	(0.00)	(0.01)						
	BERS-TOTAL RUSSELL 1000 - NET MGR			2.59	3.06	3.81	0.97	12.91						
	RUSSELL 1000 (DAILY)			2.54	2.93	3.74	0.92	13.24	33.11	16.42	1.50	11.88	7.51	9.05
	EXCESS RETURN			0.06	0.12	0.07	0.05	(0.33)	29.07	(1.56)	(3.14)	3.06	2.35	0.81
68	BERS-TOTAL FUND OF FUNDS - GROSS	150	3.35	1.30	(7.05)	(0.34)	(3.07)	5.43	40.84	17.00	(1.75)	8.87	6.57	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.17)	(0.63)	(0.34)	(0.65)	(0.71)						
	BERS-TOTAL FUND OF FUNDS - NET MGR			1.13	(7.69)	(0.67)	(3.72)	4.72						
	RUSSELL 3000 (DAILY)			2.63	2.14	3.62	0.48	12.56	33.55	16.42	1.03	11.60	7.40	7.58
	EXCESS RETURN			(1.50)	(9.82)	(4.30)	(4.20)	(7.84)	7.29	0.58	(2.78)	(2.73)	(0.82)	(0.52)

# Consolidated Performance Report

Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014	2013	2012	2011	5 Year	10 Year	ITD	Inception Date	
<b>EQUITY RETURN DETAIL</b>															
80	BERS-TOTAL INTERNATIONAL EQUITY - GROSS	943	20.98	(0.14)	(11.25)	(0.34)	(7.04)	(3.03)	17.99	18.36	(11.84)	1.22	3.79	7.03	11/01/1992
	ESTIMATED INVESTMENT FEES			(0.07)	(0.24)	(0.14)	(0.25)	(0.26)							
	BERS-TOTAL INTERNATIONAL EQUITY - NET MGR			(0.21)	(11.49)	(0.48)	(7.30)	(3.30)							
	MSCI AC WORLD EX US (NET)			(0.64)	(10.24)	(1.02)	(5.66)	(3.87)	15.29	16.83	(13.71)	0.10	1.87		
	EXCESS RETURN			0.43	(1.25)	0.54	(1.63)	0.57	2.70	1.52	1.87	1.12	1.92		
90	BERS-TOTAL DEVELOPED GROWTH ACTIVE - GROSS	313	6.97	(0.36)	(13.25)	(4.16)	(3.56)	(6.42)	29.53	18.88	(10.71)	2.45		2.57	08/01/2007
	ESTIMATED INVESTMENT FEES			(0.06)	(0.23)	(0.13)	(0.25)	(0.24)							
	BERS-TOTAL DEVELOPED GROWTH ACTIVE - NET MGR			(0.42)	(13.47)	(4.28)	(3.81)	(6.66)							
	MSCI EAFE GROWTH			(0.15)	(4.80)	(2.22)	4.09	(4.43)	22.55	16.86	(12.11)	3.24		0.75	
	EXCESS RETURN			(0.28)	(8.67)	(2.06)	(7.90)	(2.23)	6.98	2.02	1.40	(0.79)		1.83	
100	BERS-TOTAL DEVELOPED VALUE ACTIVE - GROSS	321	7.14	(0.25)	(10.50)	0.08	(9.37)	(2.98)	16.94	17.84	(9.92)	1.01	2.46	5.45	08/01/2004
	ESTIMATED INVESTMENT FEES			(0.05)	(0.19)	(0.11)	(0.19)	(0.21)							
	BERS-TOTAL DEVELOPED VALUE ACTIVE - NET MGR			(0.30)	(10.69)	(0.03)	(9.56)	(3.19)							
	MSCI EAFE VALUE NET (DAILY)			(2.79)	(15.43)	(6.65)	(5.68)	(5.39)	22.95	17.69	(12.17)	0.05	0.21	3.70	
	EXCESS RETURN			2.49	4.74	6.62	(3.87)	2.21	(6.01)	0.15	2.26	0.95	2.25	1.75	
110	BERS-TOTAL DEVELOPED SMALL CAP ACTIVE - GROSS	83	1.84	(0.47)	(0.04)	0.26	9.04	(4.60)						6.21	05/01/2013
	ESTIMATED INVESTMENT FEES			(0.08)	(0.33)	(0.17)	(0.36)	(0.32)							
	BERS-TOTAL DEVELOPED SMALL CAP ACTIVE - NET MGR			(0.55)	(0.37)	0.09	8.68	(4.92)							
	S&P EPAC SMALL CAP USD NET			(2.79)	(4.76)	(3.26)	8.58	(3.43)						4.94	
	EXCESS RETURN			2.24	4.40	3.36	0.09	(1.49)						1.28	
120	BERS-TOTAL ACTIVE EMERGING MARKETS - GROSS	226	5.03	0.43	(13.93)	4.56	(14.83)	4.14	(4.70)	18.12	(17.86)	(3.24)	3.28	7.42	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.09)	(0.31)	(0.19)	(0.31)	(0.37)							
	BERS-TOTAL ACTIVE EMERGING MARKETS - NET MGR			0.34	(14.24)	4.37	(15.14)	3.77							
	MSCI EMERGING MARKETS			0.66	(12.05)	6.41	(14.92)	(2.19)	(2.60)	18.22	(18.42)	(3.78)	3.54	7.15	
	EXCESS RETURN			(0.32)	(2.19)	(2.04)	(0.22)	5.96	(2.10)	(0.11)	0.57	0.55	(0.27)	0.27	

# Consolidated Performance Report

Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014	2013	2012	2011	5 Year	10 Year	ITD	Inception Date	
<b>EQUITY RETURN DETAIL</b>															
132	BERS-TOTAL PRIVATE EQUITY (TIME WEIGHTED)	224	4.99	2.37	8.64	3.80	14.26	22.16	15.34	7.70	19.15	13.45	5.11	5.11	07/01/2006
	NYC R3000 +3% LAGGED			1.72	2.65	8.88	2.49	21.24	24.53	35.20	5.55	14.57	11.33	11.33	
	EXCESS RETURN			0.66	5.99	(5.08)	11.77	0.92	(9.19)	(27.50)	13.60	(1.13)	(6.22)	(6.22)	
142	BERS-TOTAL PRIVATE REAL ESTATE (TIME WEIGHTED)	240	5.34	3.29	15.12	5.88	16.06	13.67	8.64	14.30	9.43	12.55	12.17	12/01/2010	
	NCREIF NFI-ODCE NET + 100 BP			2.16	11.90	4.41	15.08	12.56	14.02	10.88	16.09	12.77	14.03		
	EXCESS RETURN			1.13	3.22	1.47	0.98	1.10	(5.39)	3.41	(6.66)	(0.21)	(1.86)		
152	BERS-TOTAL INFRASTRUCTURE (TIME WEIGHTED)	32	0.71	2.63	8.88	4.42	11.63	18.85					13.47	12/01/2013	
	CPI + 4%			1.84	5.10	2.79	4.72	4.70					4.99		
	EXCESS RETURN			0.79	3.79	1.63	6.91	14.15					8.47		

# Consolidated Performance Report

Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014	2013	2012	2011	5 Year	10 Year	ITD	Inception Date	
<b>FIXED INCOME RETURN DETAIL</b>															
164	BERS-TOTAL FIXED INCOME - GROSS	1,278	28.45	3.05	4.60	6.30	(0.68)	5.69	(0.56)	8.55	9.42	4.85	6.23	5.54	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.03)	(0.14)	(0.07)	(0.13)	(0.16)							
	EST MANAGEMENT FEES			(0.03)	(0.14)	(0.07)	(0.13)	(0.16)							
	EST INCENTIVE FEES														
	EST OTHER FEES														
	EST FEE OFFSETS														
	<b>BERS-TOTAL FIXED INCOME - NET MGR</b>			<b>3.02</b>	<b>4.47</b>	<b>6.23</b>	<b>(0.81)</b>	<b>5.53</b>							
172	BERS-TOTAL STRUCTURED FIXED INCOME - GROSS	686	15.25	2.74	6.67	6.17	0.26	7.66	(2.38)	6.68	9.23	4.80	5.99	7.95	01/01/1985
	ESTIMATED INVESTMENT FEES			(0.01)	(0.06)	(0.03)	(0.06)	(0.08)							
	BERS-TOTAL STRUCTURED FIXED INCOME - NET MGR			2.72	6.61	6.14	0.20	7.58							
	NYC - CORE PLUS FIVE			2.71	7.16	6.33	0.41	7.66	(2.79)	5.41	9.40	4.57	5.87		
	EXCESS RETURN			0.01	(0.56)	(0.19)	(0.21)	(0.08)	0.41	1.27	(0.17)	0.23	0.11		
182	BERS-TOTAL TIPS - GROSS	219	4.86	1.83	4.44	6.39	(0.83)	3.37	(8.52)	7.67	13.34	2.97	4.96	4.36	06/01/2005
	ESTIMATED INVESTMENT FEES			(0.00)	(0.01)	(0.00)	(0.02)	(0.10)							
	BERS-TOTAL TIPS - NET MGR			1.83	4.43	6.39	(0.85)	3.27							
	BARCLAYS GLOBAL INFLATION LINKED: US TIPS (DAILY)			1.71	4.35	6.24	(1.44)	3.64	(8.61)	6.98	13.56	2.63	4.75	4.16	
	EXCESS RETURN			0.12	0.08	0.15	0.58	(0.37)	0.09	0.69	(0.22)	0.33	0.21	0.20	
192	BERS-TOTAL ENHANCED YIELD - GROSS	238	5.29	5.33	(0.05)	8.16	(4.34)	3.09	8.39	15.68	6.25	5.93	7.59	5.80	08/01/1997
	ESTIMATED INVESTMENT FEES			(0.09)	(0.34)	(0.18)	(0.32)	(0.34)							
	BERS-TOTAL ENHANCED YIELD - NET MGR			5.25	(0.38)	7.98	(4.66)	2.75							
	CITIGROUP BB & B			4.97	0.83	8.15	(4.21)	2.78	6.17	14.45	6.58	5.63	6.18	5.86	
	EXCESS RETURN			0.28	(1.21)	(0.18)	(0.45)	(0.04)	2.22	1.23	(0.33)	0.30	1.41	(0.06)	
202	BERS- TOTAL BANK LOANS - GROSS	107	2.37	2.91	0.56	3.50	0.48	2.34	6.33					3.73	12/01/2012
	ESTIMATED INVESTMENT FEES			(0.09)	(0.34)	(0.18)	(0.34)	(0.35)							
	BERS-TOTAL BANK LOANS - NET MGR			2.82	0.22	3.32	0.14	1.99							
	CSFB LEVERAGED LOAN INDEX			2.86	0.93	4.23	(0.38)	2.06	6.15					3.55	
	EXCESS RETURN			(0.04)	(0.71)	(0.91)	0.52	(0.07)	0.18					0.18	
212	BERS-TOTAL TARGETED INVESTMENTS (NO CASH)	30	0.66	2.06	8.93	5.63	3.60	7.31	(1.66)	4.35	7.15	4.69	5.82	7.14	12/01/1984
	BERS CUSTOM BENCHMARK (NO CASH)			1.75	5.38	4.40	1.18	5.76	(1.71)	3.74	7.09	3.53			
	EXCESS RETURN			0.31	3.55	1.23	2.42	1.55	0.05	0.60	0.06	1.16			

# Consolidated Performance Report

Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014	2013	2012	2011	5 Year	10 Year	ITD	Inception Date
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## CASH SUMMARY

224	BOARD OF ED. SHORT TERM - GROSS	82	1.82	0.13	0.47	0.33	0.39	0.28	0.29	0.53	0.62	0.42	1.67	2.12	10/01/2000
	ESTIMATED INVESTMENT FEES			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	BOARD OF ED. SHORT TERM - NET MGR			0.13	0.47	0.33	0.39	0.28	0.29	0.53	0.62	0.42	1.67		
228	C/D - FAIL FLOAT EARNINGS	0	0.00												
230	SECURITY LENDING	1	0.02												

**New York City  
Board of Education Retirement System**

# **Appendix B**

## **Public Markets Manager Performance Detail**

# Public Markets Manager Performance Detail

Net Returns Through June 30, 2016



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014
<b>EQUITY SUMMARY</b>							
<b>US EQUITY</b>							
NYC BERS BLACKROCK R2000 GROWTH	32	0.71	3.23	(10.64)	(1.58)	(1.30)	5.50
RUSSELL 2000 GROWTH DAILY			3.24	(10.75)	(1.59)	(1.38)	5.60
Excess			(0.01)	0.11	0.02	0.08	(0.11)
NYC BERS BLACKROCK R2000 VALUE	33	0.74	4.35	(2.62)	6.13	(7.38)	4.11
RUSSELL 2000 VALUE DAILY			4.31	(2.58)	6.08	(7.47)	4.22
Excess			0.05	(0.04)	0.04	0.09	(0.11)
Wellington Mgmt MCC	141	3.13	2.57	(1.01)	2.82	1.76	10.96
S&P MID CAP 400			3.99	1.33	7.93	(2.18)	9.77
Excess			(1.42)	(2.34)	(5.11)	3.94	1.19
NYC BERS BLACKROCK R1000 GROWTH	655	14.57	0.61	3.12	1.36	5.78	12.91
RUSSELL 1000 GROWTH - DAILY			0.61	3.02	1.36	5.67	13.05
Excess			(0.00)	0.10	(0.00)	0.12	(0.14)
NYC BERS BLACKROCK R1000 VALUE	682	15.17	4.57	2.83	6.28	(3.81)	13.39
RUSSELL 1000 VALUE (DAILY)			4.58	2.86	6.30	(3.83)	13.45
Excess			(0.01)	(0.03)	(0.01)	0.01	(0.06)
<b>FUND OF FUNDS</b>							
BERS-TOTAL FUND OF FUNDS	150	3.35	1.13	(7.69)	(0.67)	(3.72)	4.72
RUSSELL 3000 (DAILY)			2.63	2.14	3.62	0.48	12.56
Excess			(1.50)	(9.82)	(4.30)	(4.20)	(7.84)
BERS-TOTAL PROGRESS	75	1.68	(0.09)	(6.55)	(1.27)	(3.19)	7.77
RUSSELL 3000 (DAILY)			2.63	2.14	3.62	0.48	12.56
Excess			(2.72)	(8.69)	(4.89)	(3.67)	(4.78)

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2016

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014
BERS-TOTAL FIS	75	1.67	2.47	(8.73)	0.01	(4.25)	1.80
RUSSELL 2000 (DAILY)			3.79	(6.73)	2.22	(4.41)	4.89
Excess			(1.32)	(2.00)	(2.20)	0.17	(3.10)
<b>NON - US EQUITY</b>							
Sprucegrove MTA (BOE)	321	7.14	(0.30)	(10.69)	(0.03)	(9.56)	(3.19)
MSCI EAFE VALUE NET (DAILY)			(2.79)	(15.43)	(6.65)	(5.68)	(5.39)
Excess			2.49	4.74	6.62	(3.87)	2.21
Baillie Gifford MTA	313	6.97	(0.42)	(13.47)	(4.28)	(3.81)	(6.66)
MSCI EAFE GROWTH			(0.15)	(4.80)	(2.22)	4.09	(4.43)
Excess			(0.28)	(8.67)	(2.06)	(7.90)	(2.23)
Acadian	83	1.84	(0.55)	(0.37)	0.09	8.68	(4.92)
S&P EPAC Small Cap USD NET			(2.79)	(4.76)	(3.26)	8.58	(3.43)
Excess			2.24	4.40	3.36	0.09	(1.49)
<b>EMERGING MARKETS</b>							
ACADIAN	226	5.03	0.34	(14.24)	4.37	(15.14)	3.77
MSCI EMERGING MARKETS			0.66	(12.05)	6.41	(14.92)	(2.19)
Excess			(0.32)	(2.19)	(2.04)	(0.22)	5.96
<b>FIXED INCOME SUMMARY</b>							
<b>STRUCTURED FIXED INCOME</b>							
Blackrock Mortgages	266	5.91	1.29	4.42	3.34	1.73	
CITIGROUP MORTGAGE INDEX			1.07	4.29	3.06	1.56	
Excess			0.22	0.13	0.29	0.17	
Prudential - Credit	180	4.01	3.39	7.78	7.52	(0.22)	7.20
NYC - Investment Grade Credit			3.42	7.26	7.41	(0.65)	7.04
Excess			(0.03)	0.52	0.11	0.43	0.16

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2016

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014
Taplin Canida Habacht - Credit	117	2.60	3.86	5.47	7.68	(3.01)	8.68
NYC - Investment Grade Credit			3.42	7.26	7.41	(0.65)	7.04
Excess			0.44	(1.79)	0.28	(2.36)	1.64
Prudential-Prinvest - Credit	17	0.38	3.07	5.86	4.99	1.63	7.20
NYC - Investment Grade Credit			3.42	7.26	7.41	(0.65)	7.04
Excess			(0.35)	(1.40)	(2.41)	2.28	0.16
State Street Govt	106	2.36	3.95	11.88	9.67	0.45	12.21
NYC - Treasury Agency Plus Five			3.96	11.98	9.72	0.72	12.38
Excess			(0.01)	(0.10)	(0.06)	(0.27)	(0.16)
<b>ENHANCED YIELD</b>							
Loomis Sayles - High Yield	117	2.60	8.01	(0.21)	10.74	(7.07)	2.83
NYC-Loomis (BoA MLMSTII 7-03/BB&B PRIOR)			5.88	1.71	9.32	(4.64)	2.50
Excess			2.13	(1.92)	1.42	(2.43)	0.33
Shenkman - High Yield	121	2.69	2.71	(0.22)	5.44	(1.97)	2.66
CITIGROUP BB & B			4.97	0.83	8.15	(4.21)	2.78
Excess			(2.25)	(1.05)	(2.71)	2.24	(0.13)
<b>BANK LOANS</b>							
Babson BL	107	2.37	2.82	0.20	3.32	0.12	1.99
CSFB LEVERAGED LOAN INDEX			2.86	0.93	4.23	(0.38)	2.06
Excess			(0.04)	(0.73)	(0.91)	0.51	(0.07)
<b>TIPS</b>							
SSGA TIPS	219	4.86	1.83	4.43	6.39		
Barclays Global Inflation Linked: US TIPS (Daily)			1.71	4.35	6.24		
Excess			0.12	0.08	0.15		

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2016

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014
<b>ECONOMICALLY TARGETED INVESTMENTS</b>							
ACCESS RBC	6	0.14	1.23	4.42	3.39	1.83	6.66
Access RBC Benchmark			1.18	4.34	3.33	1.40	5.08
Excess			0.05	0.07	0.06	0.43	1.58
AFL-CIO HOUSING INV TRUST	16	0.36	1.72	5.29	4.52	1.13	6.10
Barclays Aggregate (Daily)			2.21	6.00	5.31	0.55	5.97
Excess			(0.49)	(0.71)	(0.80)	0.58	0.14
CPC CONST FACILITY	1	0.02	(2.49)	7.75	(3.32)	12.90	
CPC CONST BENCHMARK			0.76	2.99	1.52	2.90	
Excess			(3.25)	4.76	(4.84)	10.01	
BOA-PPAR (FNMA)	1	0.03	4.24	23.54	11.62	42.03	13.31
FNMA Plus 85bps			1.34	5.31	3.63	2.50	7.13
Excess			2.90	18.23	7.99	39.53	6.19
CCD-PPAR (FNMA)	1	0.02	2.83	22.59	10.03	6.69	25.71
FNMA Plus 85bps			1.34	5.31	3.63	2.50	7.13
Excess			1.49	17.28	6.41	4.20	18.58
CCD-PPAR (GNMA)	0	0.01	3.25	18.13	8.98	5.08	15.37
GNMA Plus 65bps			1.08	4.66	3.01	2.02	6.65
Excess			2.17	13.47	5.97	3.06	8.72
CFSB-PPAR (GNMA)	0	0.00	3.37	19.87	9.40	5.90	15.34
GNMA Plus 65bps			1.08	4.66	3.01	2.02	6.65
Excess			2.29	15.22	6.38	3.88	8.69
CPC-PPAR (FNMA)	1	0.02	4.17	25.93	11.78	8.96	13.91
FNMA Plus 85bps			1.34	5.31	3.63	2.50	7.13
Excess			2.83	20.62	8.15	6.46	6.78

# Public Markets Manager Performance Detail



Net Returns Through June 30, 2016

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2015	2014
JPMC-PPAR (FNMA)	2	0.04	3.75	25.63	11.10	6.18	12.06
FNMA Plus 85bps			1.34	5.31	3.63	2.50	7.13
Excess			2.41	20.32	7.48	3.68	4.93
LIIF-PPAR (FNMA)	1	0.02	5.93	32.24	19.54	6.29	38.12
FNMA Plus 85bps			1.34	5.31	3.63	2.50	7.13
Excess			4.60	26.93	15.92	3.79	30.99
LIIF-PPAR (GNMA)	0	0.00	2.74	11.14	6.85	3.92	9.74
GNMA Plus 65bps			1.08	4.66	3.01	2.02	6.65
Excess			1.66	6.49	3.84	1.91	3.09
NCBCI-PPAR (FNMA)	0	0.00	3.40	17.91	9.04	4.97	14.93
FNMA Plus 85bps			1.34	5.31	3.63	2.50	7.13
Excess			2.06	12.60	5.41	2.47	7.81
NCBCI-PPAR (GNMA)	0	0.00	3.51	18.79	9.33	5.53	16.66
GNMA Plus 65bps			1.08	4.66	3.01	2.02	6.65
Excess			2.43	14.13	6.31	3.52	10.01
<b>CASH</b>							
BOARD OF ED. SHORT TERM	82	1.83	0.13	0.47	0.33	0.39	0.28
91 DAY T-BILL			0.07	0.19	0.15	0.05	0.02
Excess			0.06	0.28	0.19	0.35	0.26
C/D - FAIL FLOAT EARNINGS	0	0.00					
SECURITY LENDING	1	0.02					

**New York City  
Board of Education Retirement System**

# **Appendix C**

## **Alternative Assets Manager Performance Detail**

# Alternative Assets Manager Performance Detail



Through March 31, 2016

	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
<b>TOTAL PRIVATE EQUITY</b>		510,363,216	244,661,930	109,498,044	222,085,682	1.36	10.0%
<b>TOTAL ACTIVE</b>		510,363,216	244,661,930	109,498,044	222,085,682	1.36	10.0%
Mesirow Financial Private Equity Partnership Fund III, L.P.	2005	57,000,000	54,238,273	57,610,092	32,605,530	1.66	8.9%
Mesirow Financial Private Equity Partnership Fund IV, L.P.	2006	25,000,000	21,717,233	14,753,759	18,689,395	1.54	9.9%
New York Fairview Private Equity Fund, L.P.	2006	19,000,000	17,314,108	14,064,824	9,663,119	1.37	6.8%
Mesirow Financial Private Equity Partnership Fund V, L.P.	2009	45,000,000	31,514,326	9,008,886	38,539,973	1.51	15.3%
Platinum Equity Capital Partners III, L.P.	2012	15,000,000	10,469,754	6,474,549	9,195,110	1.50	47.6%
Warburg Pincus Private Equity XI, L.P.	2012	25,000,000	21,514,730	2,796,133	23,857,369	1.24	12.8%
Apollo Investment Fund VIII, L.P.	2013	20,000,000	6,398,192	177,895	6,503,005	1.04	4.5%
Carlyle Partners VI, L.P.	2013	20,000,000	9,480,894	371,801	9,061,462	0.99	-0.4%
Carlyle Partners VI, L.P. - Side Car	2013	2,200,000	1,193,499	-	1,092,631	0.92	NM
CVC Capital Partners VI, L.P.	2013	17,381,074	6,402,538	34,752	5,724,975	0.90	NM
Landmark Equity Partners XV, L.P.	2013	19,000,000	6,534,626	2,091,819	5,469,160	1.16	11.9%
Landmark Equity Partners XV, L.P. - Side Car	2013	6,000,000	2,515,826	435,707	2,663,618	1.23	16.2%
ASF VI, L.P.	2014	15,000,000	6,181,782	265,175	7,240,822	1.21	NM
ASF VI NYC Co-Invest, L.P.	2014	5,000,000	3,043,934	473,000	3,406,000	1.27	NM
Centerbridge Capital Partners III, L.P.	2014	2,500,000	678,914	-	737,391	1.09	NM
Crestview Partners III, L.P.	2014	15,000,000	3,434,581	56,712	3,272,194	0.97	NM
Crestview Partners III (Co-Investment B), L.P.	2014	5,000,000	1,676,108	70,233	1,664,200	1.03	NM
Lexington Capital Partners VIII, L.P.	2014	20,000,000	4,425,887	654,807	4,876,840	1.25	NM
Siris Partners III, L.P.	2014	3,500,000	571,773	-	518,472	0.91	NM
Vista Equity Partners Fund V, L.P.	2014	25,000,000	22,248,738	14,945	24,594,704	1.11	NM
<u>NYCBERS - 2012 Emerging Manager Program</u>	<u>2012</u>	<u>25,000,000</u>	<u>7,155,929</u>	<u>20,728</u>	<u>7,405,885</u>	<u>1.04</u>	<u>NM</u>
American Securities Partners VII, L.P.	2015	8,000,000	73,119	73,119	-	0.00	NM
ASF VII, L.P.	2015	10,000,000	509,949	41,906	528,560	1.12	NM
ASF VII B NYC Co-Invest, L.P.	2015	6,000,000	600	-	600	1.00	NM
<u>NYCBERS - 2015 Emerging Manager Program</u>	<u>2015</u>	<u>30,000,000</u>	<u>720,687</u>	<u>-</u>	<u>629,147</u>	<u>0.87</u>	<u>NM</u>
Warburg Pincus Private Equity XII, L.P.	2015	21,500,000	795,500	7,201	672,493	0.85	NM
Welsh, Carson, Anderson & Stowe XII, L.P.	2015	10,000,000	2,625,430	-	2,407,488	0.92	NM
Ares Corporate Opportunities Fund V, L.P.	2016	10,000,000	-	-	-	0.00	NM
Bridgepoint Europe V, L.P.	2016	8,484,643	968,163	-	987,485	0.00	NM
Bridgepoint Europe V Co-Invest	2016	2,828,214	-	-	-	0.00	NM
EQT VII, L.P.	2016	16,969,286	256,836	-	78,054	0.00	NM

Information provided by the New York City Board of Education Retirement System Consultants

# Alternative Assets Manager Performance Detail

Through March 31, 2016



	Vintage Year	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
<b>TOTAL REAL ASSETS</b>		416,276,931	243,076,511	48,008,774	263,104,800	1.28	12.6%
<b>TOTAL PRIVATE REAL ESTATE</b>		345,276,931	215,331,524	47,057,119	234,116,610	1.31	12.4%
<b>TOTAL INFRASTRUCTURE</b>		71,000,000	27,744,987	951,655	28,988,190	1.08	9.6%
<b>TOTAL PRIVATE REAL ESTATE</b>							
LaSalle Property Fund	2011	27,600,000	27,600,000	4,812,068	36,296,077	1.49	12.8%
UBS Trumbull Property Fund	2011	41,400,000	54,120,122	10,204,528	70,967,291	1.50	10.4%
Franklin Templeton Private Real Estate Fund	2011	30,000,000	28,750,809	22,823,287	15,778,380	1.34	22.0%
Brookfield Strategic Real Estate Partners	2012	10,000,000	10,372,239	2,853,125	11,159,371	1.35	18.2%
NYC Asset Investor #2 LLC	2013	11,000,000	9,100,090	1,375,652	9,379,867	1.18	13.5%
NYC Asset Investor #1 LLC	2013	10,000,000	10,664,917	1,125,793	12,443,743	1.27	20.9%
NYC Asset Investor #3 LLC	2013	8,000,000	2,030,327	31,308	2,055,416	1.03	1.9%
MetLife Core Property Fund	2014	15,000,000	15,000,000	876,425	16,909,313	1.19	16.9%
Blackstone Real Estate Partners Europe IV (USD Vehicle)	2014	32,500,000	26,284,409	2,879,036	25,964,811	N/A	N/A
Carlyle Realty Partners VII	2014	25,000,000	8,836,812	32,589	9,551,479	N/A	N/A
Blackstone Real Estate Partners VIII	2015	16,500,000	5,380,628	8,162	5,696,016	N/A	N/A
H/2 Special Opportunities Fund III	2015	15,000,000	7,372,580	-	7,457,476	N/A	N/A
Jamestown Premier Property Fund	2016	5,000,000	1,376,286	35,146	1,352,879	N/A	N/A
NYCRS Artemis Co-Investment	2016	11,000,000	1,164,099	-	1,600,631	N/A	N/A
USAA Eagle Real Estate Fund	2016	10,000,000	6,269,575	-	6,464,317	N/A	N/A
European Property Investors Special Opportunities Fund IV (E	2016	11,176,931	1,008,631	-	1,039,543	N/A	N/A
PW Real Estate Fund III	2016	11,000,000	-	-	-	N/A	N/A
Westbrook Partners X	2016	10,000,000	-	-	-	N/A	N/A
Westbrook Partners X - Co-Investment	2016	2,000,000	-	-	-	N/A	N/A
Exeter Core Industrial Club Fund II	2016	10,000,000	-	-	-	N/A	N/A
Divco West Fund V	2016	10,000,000	-	-	-	N/A	N/A
Lone Star Real Estate Fund V	2016	23,100,000	-	-	-	N/A	N/A

Information provided by the New York City Board of Education Retirement System Consultants

## Alternative Assets Manager Performance Detail

Through March 31, 2016



### **TOTAL INFRASTRUCTURE**

Brookfield Infrastructure Fund II	2013	10,000,000	5,969,820	665,042	6,570,579	1.21	16.6%
IFM Global Infrastructure	2014	15,000,000	15,231,834	231,834	16,022,673	N/A	N/A
First Reserve Energy Infrastructure Fund II	2014	15,000,000	2,268,572	-	2,203,681	N/A	N/A
KKR Global Infrastructure Investors II L.P.	2014	19,000,000	4,274,761	54,779	4,191,257	N/A	N/A
Global Infrastructure Partners III-A/B, L.P.	2015	12,000,000	-	-	-	N/A	N/A

Information provided by the New York City Board of Education Retirement System Consultants

**New York City  
Board of Education Retirement System**

# Appendix D

## Footnotes

- The Barclays Capital Aggregate (then known as the Lehman Brothers Aggregate) was used prior to 1/1/89. Effective 1/1/89, in the Government Sector, maturities of less than 5 years were dropped from the Salomon and Lehman indices. From that date until 7/1/99 the benchmark was the NYC Core + 5, from Lehman.
  - Effective 7/1/94, the NYC Core + 5 Index includes BBB rated securities.
  - Effective 7/1/99, the basis of the NYC Index was changed from Lehman Brothers to Salomon. Also effective 7/1/99, only Salomon indices have been used to compare all fixed income managers.
  - Effective 4/1/03, the name of the benchmark provider was changed from Salomon to Citigroup.
  - Effective 7/1/03, the “NYC-Loomis” benchmark index for the Loomis Sayles Enhanced Yield portfolio reflects a change from the Citigroup BB&B Index to the more appropriate BofA Merrill Lynch High Yield Master II Index.
  - Effective 7/1/09, the Core+5 program was restructured.
    - The U.S. Gov’t sector benchmark Index was changed from the Citigroup Core+5 Treasury/Gov’t Sponsored Index to the Citigroup Core+5 Treasury/Agency Index.
    - The Corporate and Yankee sectors were combined to form the new Investment Grade Credit sector. The benchmark for the new combined sector is the customized Citigroup Credit Index. For historical performance purposes, the old Corporate sector Index is linked to the new Credit sector Index.
    - There were no changes to the Mortgage sector Index.
    - The total Core+5 results and benchmark returns combine the three sectors. Historical total Core+5 returns continue to include the old Corporate and Yankee sector returns.

## General Notes

- Estimated management fees for public market investments are calculated on an accrual basis without adjustment for management fee caps. Alternative investment fees are recorded on a cash basis. Since not all alternative managers currently provide detailed fee disclosure, the alternative investment fees noted here are not comprehensive.
- Public Market returns are Net of Manager Fees for periods after January 2014 and Gross of investment advisory fees for other periods unless otherwise indicated.
- Public market excess returns for periods prior to 2014 are based on Gross performance.

## Page Specific

### Page 12 & 13 - Portfolio Asset Allocation

- **Rebalancing Ranges:** the minimum and maximum weights that actual Asset Allocation may reach before rebalancing between Asset Classes is necessary.

### Pages 14 - 16 - Performance Attribution: Total Plan

- **Plan Return at Policy Weights:** the return of the Total Plan assuming actual Asset Class results were maintained at target (Adjusted Policy) weights. *Figure = (Return of Asset Class 1 \* Target Weight) plus (Return Of Asset Class 2 \* Target Weight) plus (.....)*
- **Allocation Effect** = Total Plan Return minus Plan Return At Adjusted Policy Weights. Allocation is the Contribution to Performance resulting from an overweight or underweight to an asset class. E.g. an underweight to an Asset Class that under-performs results in a positive Allocation Effect and vice versa.
- **Selection Effect** = Equal to the Custom Benchmark (Adjusted Policy Index) Return minus Plan Return at Adjusted Policy Weights. This illustrates how the Managers have added or removed value based on their Security Selection decisions, e.g., *If the manager's Actual Returns are higher than the Implied Return there will be a positive Selection Effect.*
- **Policy Index = Custom Benchmark**  
*The "policy index" is a custom benchmark representing the weighted average return of the weighted benchmark indexes for each major investment program. Weights may reflect an adjustment of actual policy for outstanding commitments for new or revised programs, such as for private market programs, which are invested gradually, or for any new or updated program requiring the completion of RFPs and contracts. The policy index/custom benchmark is calculated monthly based on adjusted policy weights at the beginning of each month.*

*The indexes and most recent policy weights are as follows:*

*U.S. Equity: Russell 3000 \* 37.00%*

*International Developed (EAFE) Markets: MSCI EAFE \* 17.00%*

*Emerging Markets: MSCI Emerging Markets \* 5.00%*

*Private Equity: Russell 3000 + 300 b.p. per annum \* 4.97%*

*Private Real Estate: NFI - ODCE Net+100BPS \* 5.32%*

*Infrastructure: CPI + 4% \* 0.71%*

*Domestic Fixed Income: NYC Core +5 \* 17.00%*

*TIPS: Lehman U.S. TIPS \* 5.00%*

*Enhanced Yield: Citigroup BB&B \* 5.50%*

*Bank Loans: Credit Suisse Leveraged Loan \* 2.50%*

### **Page 17 – Allocation and Selection Effects - Asset Class Breakdown**

- This chart aims to break down the Allocation and Selection Effects shown on the Performance Attribution pages. The aim of the Page is to show the asset classes where Managers are either out performing or under performing their benchmark and to show the basis point effect that this is having on Plan performance.