



New York City
Board of Education Retirement System
Performance Overview as of March 31, 2019

Total Fund Overview

New York City Board of Education Retirement System

Table of Contents:

Consultant's Commentary & Performance Charts	p.3
Appendix A - Consolidated Performance Report	p.32
Appendix B - Public Markets Manager Performance Detail	p.37
Appendix C - Alternative Assets Manager Performance Detail	p.45
Appendix D - Footnotes	p.50

Through March 31, 2019



New York City Board of Education Retirement System (BERS)

Consultant's Commentary – Through March 31, 2019

Total Fund Performance

The Board of Education Retirement System (BERS) Total Fund returned +8.17% net of fees for the quarter ended March 31, 2019, versus the policy benchmark's return of +7.23%. For the fiscal year to date as of March 31, 2019, the Total Fund returned +3.52% net of fees, versus the benchmark return of +3.09%.

Total Fund Asset Allocation

As of March 31, 2019, the BERS Total Fund had \$6.24 billion, up from \$5.75 billion at December 2018.

Active U.S. Equity Commentary

As of March 31, 2019, U.S. Equity was \$1.99 billion (31.9%) of the NYBERS Total Fund. The U.S. equity composite was positive in the first quarter of 2019 returning +14.32%. This performance outperformed the Russell 3000 index return of +14.04%.

Active U.S. Equity Managers

- **Wellington** returned +20.30% during the quarter versus +14.49% for the S&P Midcap 400 index. For the fiscal year to date as of March 31, 2019, Wellington returned +3.57% versus -1.63% for the S&P Midcap 400 index. Wellington is the only active mid cap U.S. manager. BERS is participating in the search to expand the allocation to small cap U.S. active.
- Security selection was the primary driver of relative outperformance. Strong selection in health care was modestly offset by selection in communication services and financials. Sector allocation, a result of our bottom-up stock selection process, also contributed to returns. Allocation effect was driven by our overweight to information technology and underweight to consumer discretionary, but modestly offset by our overweight to health care.
- Our top two relative contributors were out of benchmark allocations to Sage Therapeutics and Genpact. Shares of Sage Therapeutics soared after announcing positive Phase 3 results of its oral depression drug SAGE-217. Significant client wins helped drive Genpact's revenue growth above consensus and the stock price higher, leading to raised revenue guidance.

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Through March 31, 2019



- Our top two relative detractors were out of benchmark allocations to Markel and Cimpress. Markel Corporation's shares dropped during the period as they missed revenue targets, largely a result of losses in the Investing Segment unit. Shares of Cimpress stock were down over 25% due to disappointing holiday- quarter results and reduced its forward growth expectations.

World ex-USA Commentary

As of March 31, 2019, World ex-USA Equity was \$765.4 million (12.3%) of the NYBERSTotal Fund. World ex-USA Equity returned +13.53% in the first quarter of 2019 versus +10.52% for the World ex-USA custom benchmark.

Active World ex-USA Equity Managers

- **Sprucegrove** returned +9.40% during the quarter versus +10.45% for NYC Developed Value Benchmark. For the fiscal year to date as of March 31, 2019, Sprucegrove returned -1.95% versus -2.41% for the NYC Developed Value Benchmark.
- The portfolio continues to represent high quality value style holdings with a projected ROE of 14.4%, which is higher than the World ex-USA Index at 11.0% and financial leverage of 2.1x, which is below the World ex-USA Index at 2.6x. The portfolio has had a normalized P/E of 12.8x, a 2.0x P/B and a 3.3% dividend yield. These characteristics are consistent with the historical profile of the manager. The manager believes the portfolio is attractively valued compared to the market.
- The U.K. was the largest country exposure in the Fund at 24.0%, followed by Japan at 11.1%. Exposure to Emerging Markets was 14.0% and cash was 3.2% of the Fund at quarter end.
- Over the quarter, the Fund's underperformance was mainly due to Emerging Markets exposure (South Africa, India) and stock selection in Hong Kong (Jardine Matheson, Television Broadcasts) and France (Air Liquide, Total). An underweight position in Canada also detracted from relative performance. Underperformance, was partially offset by positive relative performance due to stock selection in the U.K. (Travis Perkins, Anglo American).
- The top 10 holdings represent +23.2% of the portfolio.
- **Baillie Gifford** returned +19.04% in the quarter versus +10.45% for NYC Developed Growth Benchmark. For the fiscal year to date as of March 31, 2019, Baillie Gifford returned -6.07% versus -2.41% for the NYC Developed Growth Benchmark.

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Through March 31, 2019



- ASML, a semiconductor equipment manufacturer, was the portfolio's largest holding at 5.7%.
- At quarter end, the portfolio had +14.5% invested in Emerging Markets.
- The top 10 holdings represent +42.9% of the portfolio.

- **Acadian** outperformed for the quarter, +10.29% versus +9.92% for the S&P EPAC Small Cap Index. Acadian also outperformed for the fiscal year as of March 31 2019, -8.12% versus -8.54% for the S&P EPAC Small Cap Index.
- Gains realized from stock selection were reduced by value lost from country allocations. Key sources of positive active return included an opportunistic exposure to China, stock selection in Israel, and a combination of stock selection and a market underweight in Japan. Stock selection in Germany and France was less successful, as was a combination of stock selection and an underweight position in the U.K.
- At quarter end, the portfolio's emerging markets exposure was 11.8%. The portfolio held 1,118 stocks.

Emerging Markets Equity Commentary

As of March 31, 2019, Emerging Markets Equity was \$444.8 million (7.1%) of the NYBERS Total Fund. Emerging Markets underperformed for the quarter, +8.70% versus +9.92% for the MSCI Emerging Markets, net Index. Emerging Markets underperformed for the fiscal year as of March 31, 2019, -1.45% versus +0.60% for the MSCI Emerging Markets, net Index.

Emerging Markets Equity Managers

- **Acadian** underperformed for the quarter, posting a +8.10% versus +9.92% for the MSCI Emerging Markets, net Index. Acadian also underperformed for the fiscal year as of March 31, 2019, -2.40% versus +0.60% for the MSCI Emerging Markets, net Index.
- Losses incurred from stock selection were deepened by value lost from country allocations. Key sources of negative active return included overweight positions in Turkey and Poland, along with a combination of stock selection and a market underweight in China. Stock selection in Korea was more successful, as was a combination of stock selection and an underweight position in India.
- At quarter end, the portfolio held 468 stocks.

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Through March 31, 2019



- **CONY GTEM BlackRock** returned +10.04% versus +9.92% for the MSCI Emerging Markets, net Index during the quarter. CONY GT EM BlackRock returned +0.71% versus +0.60% for the MSCI Emerging Markets, net Index during the fiscal year as of March 31, 2019.
- All eleven GICS 1 sectors advanced in the quarter as improved Sino-American trade relations and a relief from tightening financial conditions helped improve sentiment. Consumer discretionary (+19.4%) and real estate (+15.6%) led the market. Energy (+12.2%) was also well bid amid a +27% increase in Brent crude prices in the quarter.
- In Latin America, Colombian equities outperformed and gained +25% in the quarter. Though the country led EM country performance in Q1, the MSCI Colombia Index remains -40% below 2012 highs. Elsewhere in LatAm, Brazilian equities gained +8.4% in the quarter as President Jair Bolsonaro assumed office at the start of the year.

Fixed Income – Structured Manager Composite Commentary

As of March 31, 2019, The Total Structured Portfolio was \$1.23 billion (19.6%) of the NYBERSTotal Fund. Structured Fixed Income returned +2.99% in the first quarter versus +3.41% for the benchmark. For the fiscal year as of March 31, 2019, Structured Fixed Income returned +4.58% versus +5.34% for the benchmark.

Fixed Income – Structured Manager Composite Managers

- **BlackRock (mortgages)** returned +2.32% in the quarter, outperforming the FTSE Mortgage index return of +2.16%. For the fiscal year as of March 31, 2019, BlackRock (mortgages) returned +4.27% versus +4.21% for the FTSE Mortgage index.
- Mortgages generally fared well over the month, with 30-year conventional par coupon spreads tightening 8 bps as primary refinance rates touched 4% -- a level last seen in January 2018. The range-breaking rally in March has led to a sharp contraction in mortgage index duration (by nearly 60 bps), leading to a large convexity for the index loss (-1 bps net excess return) due to the lack of delta hedging. The rate rally has brought prepay concerns to the forefront of investor focus, manifested primarily in the wide dispersion of performance within mortgages. FN 4.0/3.0 underperformed 5+ ticks on the month, as investors fled from the most negatively convex mortgage assets, such as recently originated FN 4.0 collateral, into less refinanceable assets. Seasoned pools continued to put in strong performance with more index managers rotating out of TBAs to match the convexity profile of the index. Mirroring price action on the conventional stack, lower coupon G2/FN swaps went out 1-3 ticks tighter, while higher coupon swaps lagged 5-12 ticks on the month.

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Through March 31, 2019



- CMBS spreads hit local tights as two benchmark new issue last cash flows printed at +83 but have widened out ~5bps from there into quarter end. Generic 10yr conduit (pooled) AAA's were 6 bps tighter on the month to S+88; AA's were marginally tighter at +130; Single A's were 10 tighter to 180; and BBB- were about 10 bps tighter to +290. March saw approximately \$8.7bn of private label issuance, with \$3.6 bn of that in the conduit space. On the agency side, benchmark 10yr Freddie seniors oscillated around S+58, closing roughly flat on the month. Agency issuance continues to be robust and was \$14.7 bn for March. Finally, CMBX was wider on the month in sympathy with broader risk markets, with AAA tranches out 3-5bps and BBB- tranches generally out by 15 bps.
- **Prudential (credit)** returned +4.74% in the quarter, outperforming the Investment Grade Credit index return of +4.72%. For the fiscal year as of March 31, 2019, Prudential (credit) returned +5.74% versus +5.82% for the Investment Grade Credit index.
- **SSgA (governments)** returned +3.38% in the quarter, slightly ahead the +3.37% return for its NYC - Treasury Agency plus five index benchmark. For the fiscal year as of March 31, 2019, SSgA (governments) returned +5.51% versus +5.57% for the NYC - Treasury Agency plus five index.
- Throughout the quarter, the Fed would stay on message indicating that data dependency would drive policy decision. The Fed continued to unwind its balance sheet throughout the quarter. On average, since October, the Fed let \$9.4 trillion roll off per week. This certainly had an impact on short term rates as dealers, at times, struggled to fund this additional treasury and MBS supply. Primary dealer positions in US Government securities have been noticeably higher over the past 5 months, increasing by over \$130bln since October.
- **SSgA 1 -3 Yr. Treasury Index** returned +0.98% in the quarter, slightly behind of the FTSE USBIG Treasury 1 -3 Yr. index return of +0.99%. For the fiscal year as of March 31, 2019, the SSGA 1-3 Yr. Treasury Index returned +2.47%, slightly behind of the FTSE USBIG Treasury 1 -3 Yr. index return of +2.48%.
- Over the reporting period, tracking for the strategy was very tight; therefore, an attribution analysis is not applicable.
- **Taplin, Canida & Habacht** returned +5.70% in the quarter versus +4.72% for the Investment Grade Credit index. For the fiscal year as of March 31, 2019, Taplin, Canida & Habacht returned +5.41% versus +5.82% for the Investment Grade Credit index.
- Sector and Quality Selection added to performance during the quarter. The Portfolio had an overweight to corporate credit (+273 basis points of excess return vs. +145 basis points for non-corporate credit), which benefitted returns as spreads tightened meaningfully on improved risk

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Through March 31, 2019



sentiment and market liquidity. Overweight positioning in lower quality investment grade (BBB +335 basis points of excess return) and allocations to high yield (+558 basis points of excess returns) had particularly positive impacts on the portfolio. By sector, the overweight to industrials (+290 basis points of excess return) and underweight to utilities (+156 basis points of excess return) added further to relative performance.

- Security selection was favorable for the quarter, in particular, securities in the energy, pharmaceuticals and financials sectors contributed to performance, while selection with the food & beverage sector detracted from performance on idiosyncratic developments. Tactical yield curve management was beneficial during the quarter as portfolios had mildly long duration versus the benchmark as interest rates continued the decline began in the fourth quarter.

Enhanced Yield Fixed Income & Bank Loans Commentary

As of March 31, 2019, Enhanced Yield Fixed Income & Bank Loans was \$406.3 million (6.5%) of the NYBERS Total Fund. This allocation is in line with the investment policy target. The high yield manager search has been completed and Shenkman and Loomis were replaced with Nomura and Mackay Shields.

Enhanced Yield Fixed Income & Bank Loans Managers

- **Barings Bank Loans** returned +3.77% during the quarter, slightly underperforming the +3.78% return of the Credit Suisse Leveraged Loan Index. For the fiscal year as of March 31, 2019, Babson returned +2.01%, underperforming the +2.53% return of the Credit Suisse Leveraged Loan Index.
- Quarterly attribution analysis indicates that favorable Credit Selection contributed to favorable performance comparison during the period. Industry Sector Allocation was a neutral contributor with the exception of the negative contribution from a very modest cash position that impacted returns during the quarter's sharply positive market performance. The attribution within Credit Selection does highlight some divergence in the selection within certain industry sectors such as in Consumer Durables and Information Technology.
- Select issuers in the Information Technology space drove a meaningful positive contribution to the overall quarterly results. Veritas, a Bottom Ten performer in the prior quarter was the Top 10 performing issuer in the first quarter. Joining Veritas on that list was Misys along with others in the sector that produced the largest positive contribution to Credit Selection when compared to the other industry sectors.

 Segal Marco Advisors

Through March 31, 2019



- Portfolio contribution by asset type reveals the portfolio's modest allocation of 4.52% in bonds (on average) for the quarter was a meaningfully positive contributor during the quarter. The performance of issuers such as Veritas and York Risk Services in which the Fund has bond holdings in conjunction with their term loans helped drive the bond allocation results. Contributing to the portfolio's favorable performance comparison was the positive contribution from loans at 92.92% of portfolio holdings only partly offset by the poor performance of Serta Simmons Holdings as previously discussed. Also as discussed, a very modest cash allocation of 1.57% on average negatively contributed to results.

TIPS, ETI, Cash Commentary

As of March 31, 2019, Fixed Income – TIPS, ETI and Cash was \$397.0 million (7.0%) of the NYBERS Total Fund.

Fixed Income – TIPS Managers

- **SSgA (TIPS)** returned +3.24% in the quarter, slightly ahead the +3.19% return for its Barclays Global Inflation Linked Index. SSgA (TIPS) returned 1.92% for the fiscal year as of March 31, 2019, matching the +1.92% return for its Barclays Global Inflation Linked Index.

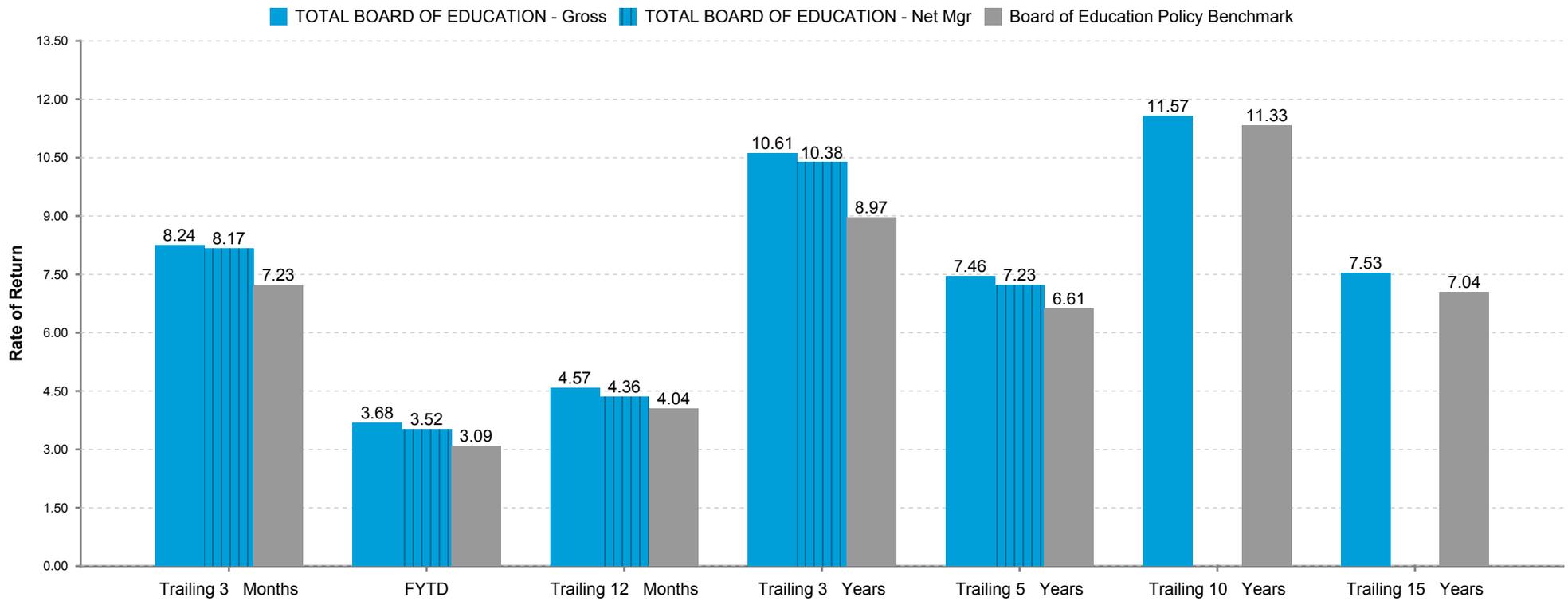
Total Portfolio Returns: March 31, 2019



Market Value (Billions)

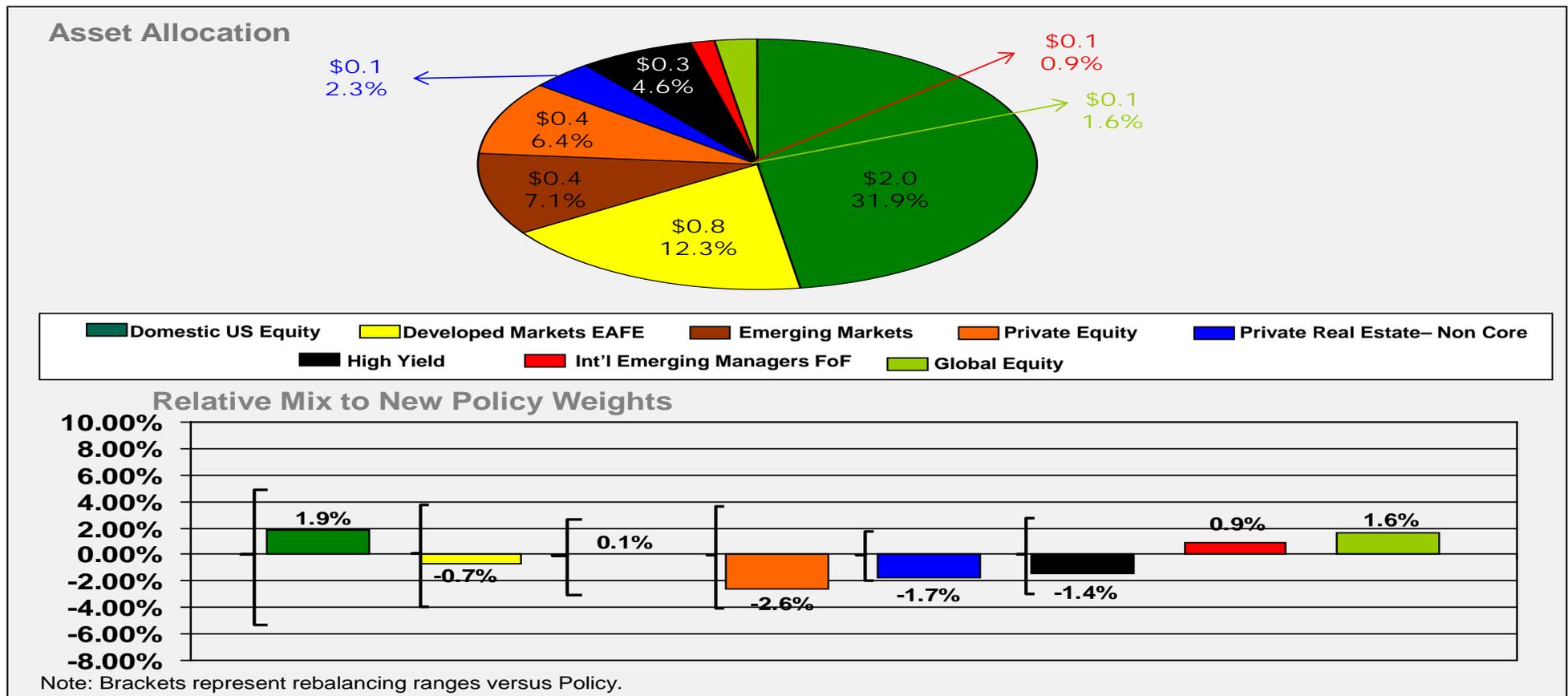
\$6.2

TOTAL BOARD OF EDUCATION

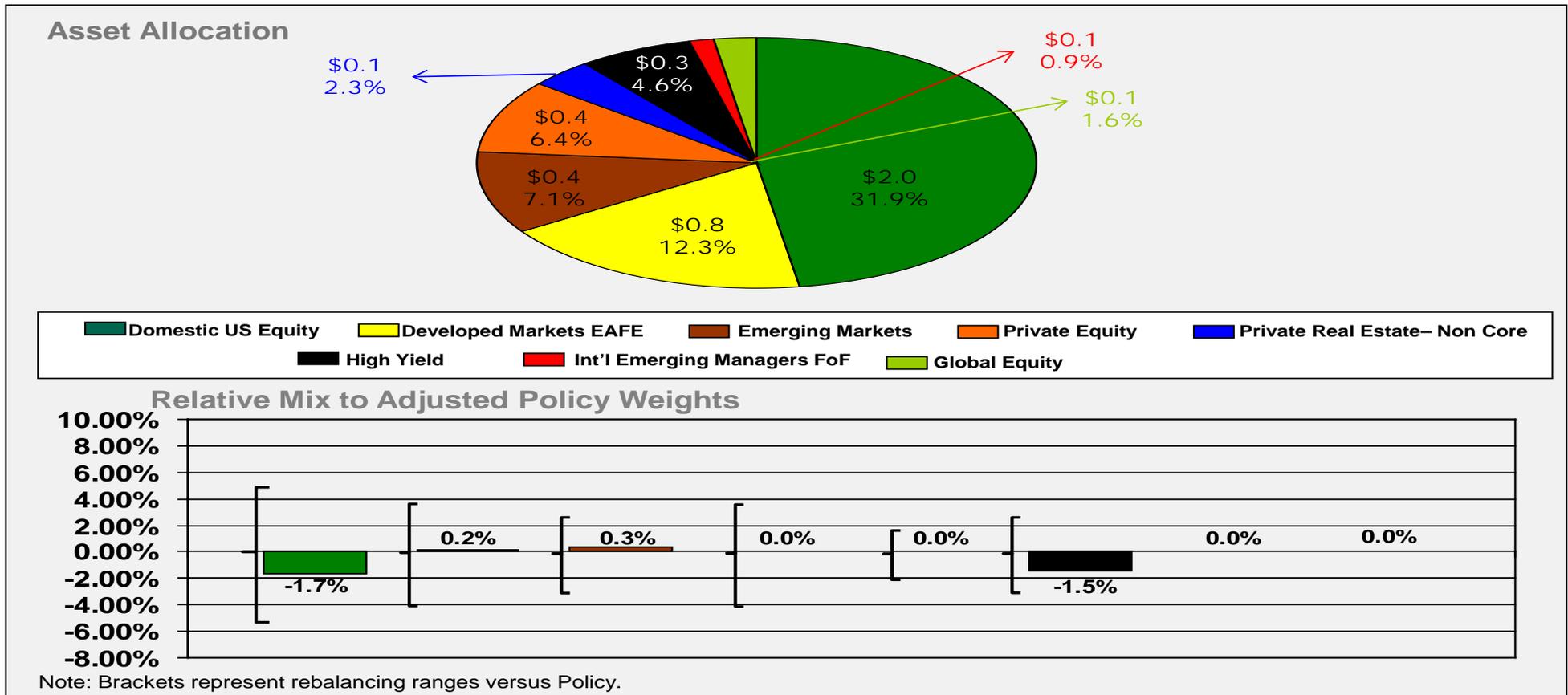


	Plan 3 Years	Benchmark 3 Years	Plan 5 Years	Benchmark 5 Years	Plan 10 Years	Benchmark 10 Years
Standard Deviation						
TOTAL BOARD OF EDUCATION	6.1	5.8	7.5	6.7	8.9	9.1

Portfolio Asset Allocation – Growth

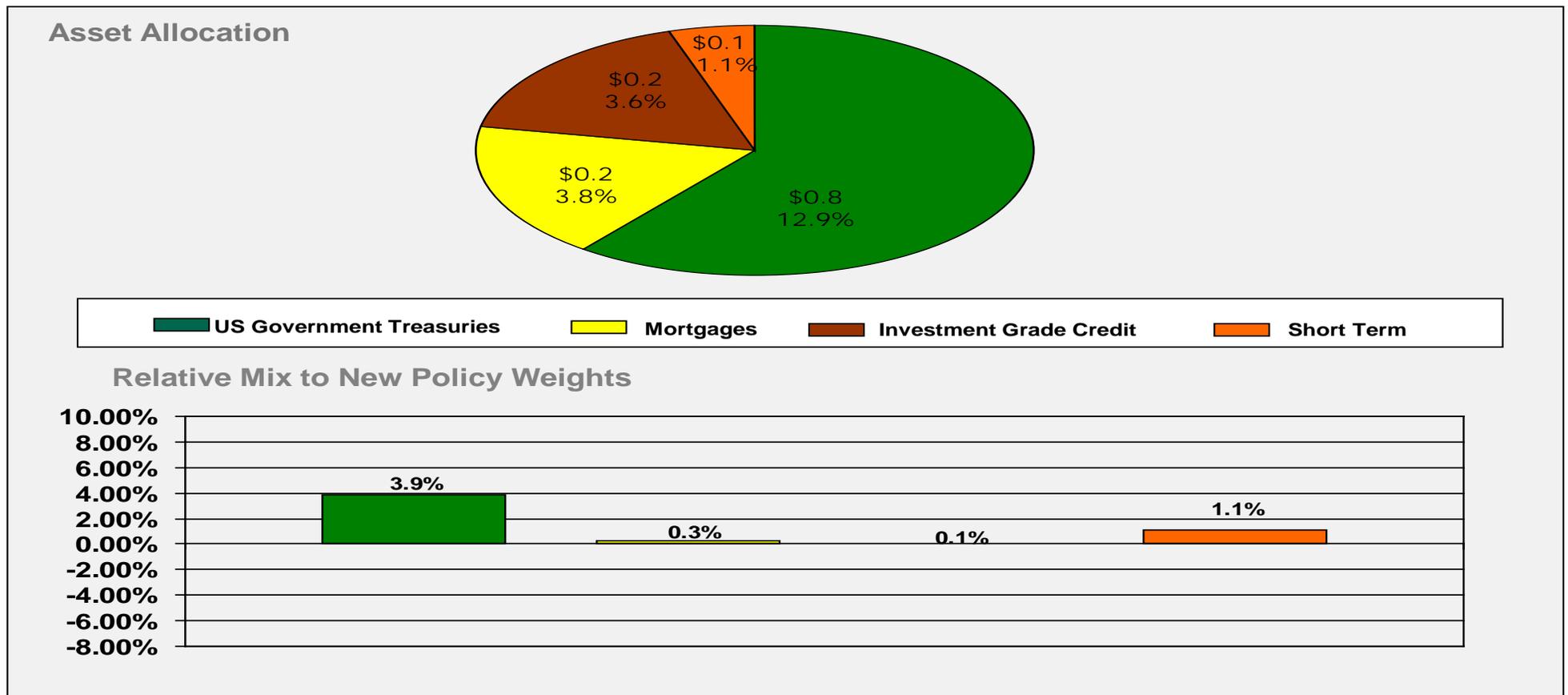


Portfolio Asset Allocation – Growth

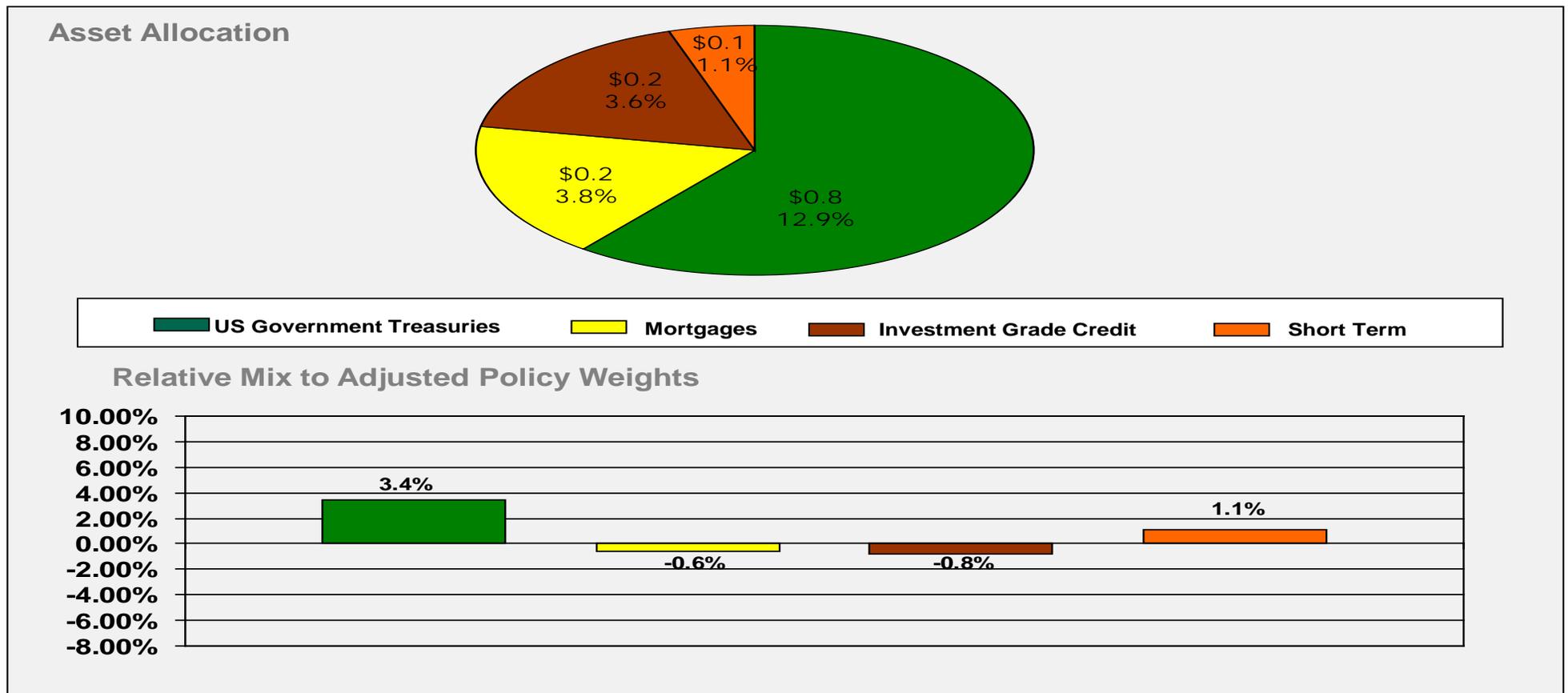


Note: On March 29, 2019 BERS' combined Fixed Income and Cash portfolios have a duration of 6 years. The duration of the Barclays US Aggregate Index was 5.8 years on that date.

Portfolio Asset Allocation – Deflation Protection

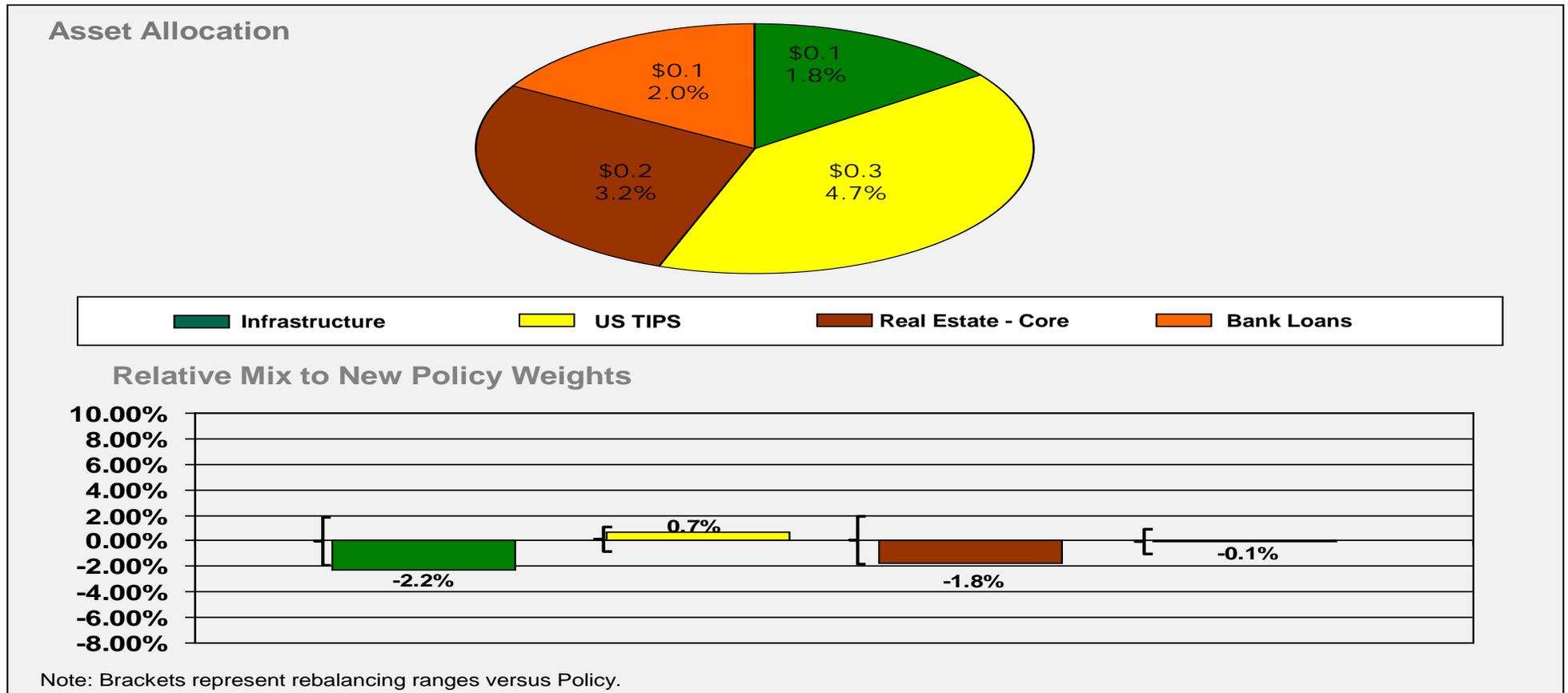


Portfolio Asset Allocation – Deflation Protection

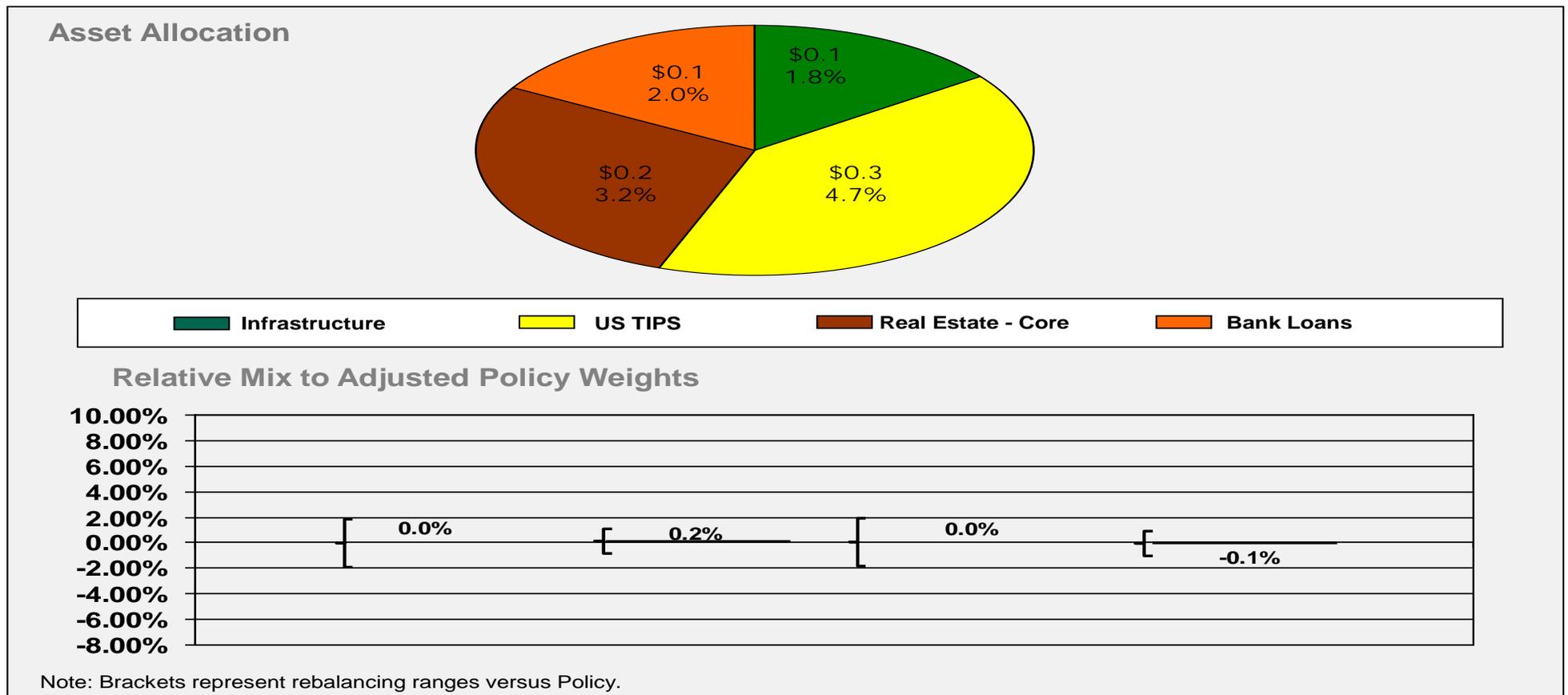


Note: On March 29, 2019 BERS' combined Fixed Income and Cash portfolios have a duration of 6 years. The duration of the Barclays US Aggregate Index was 5.8 years on that date.

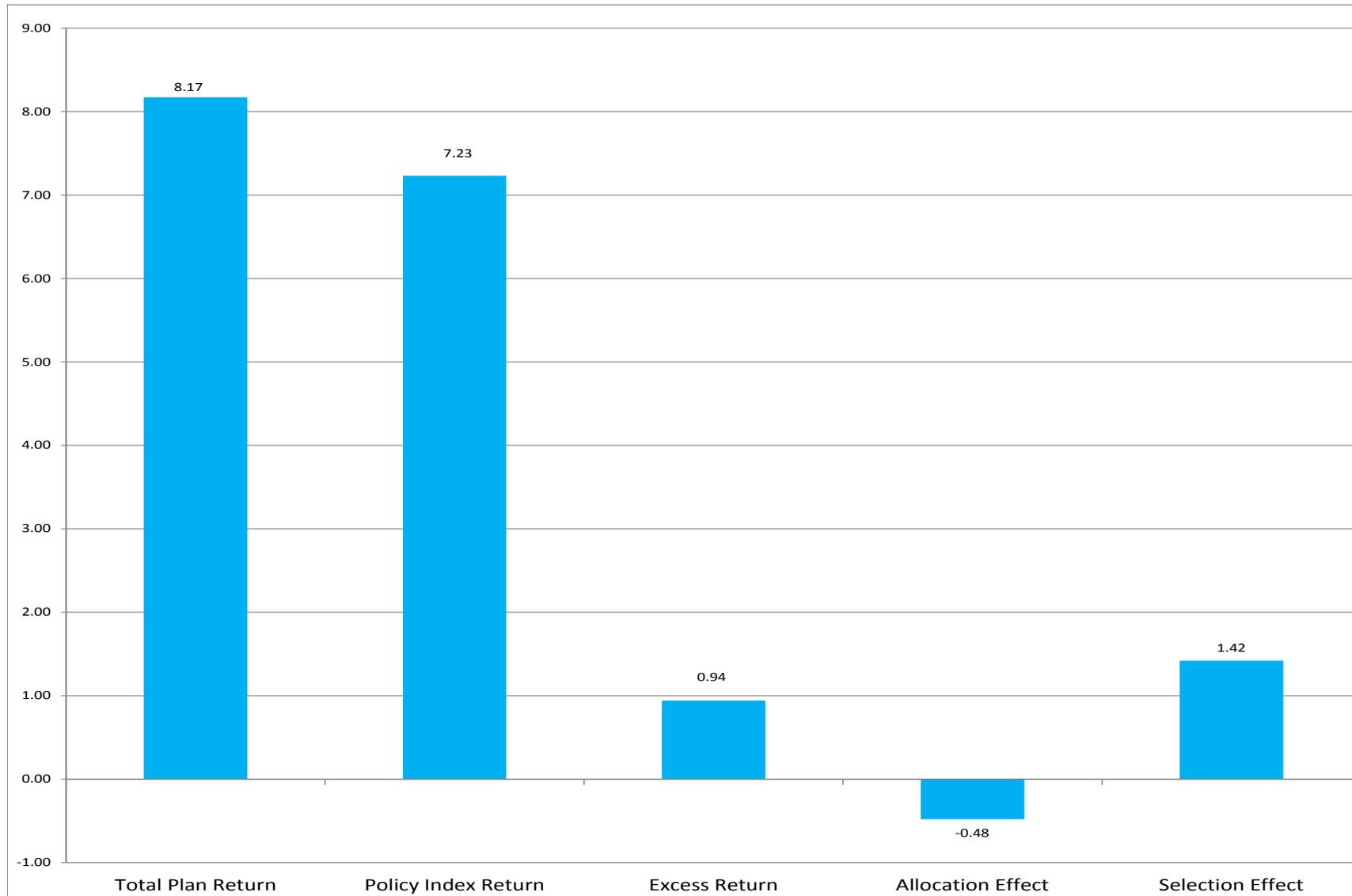
Portfolio Asset Allocation – Inflation Protection

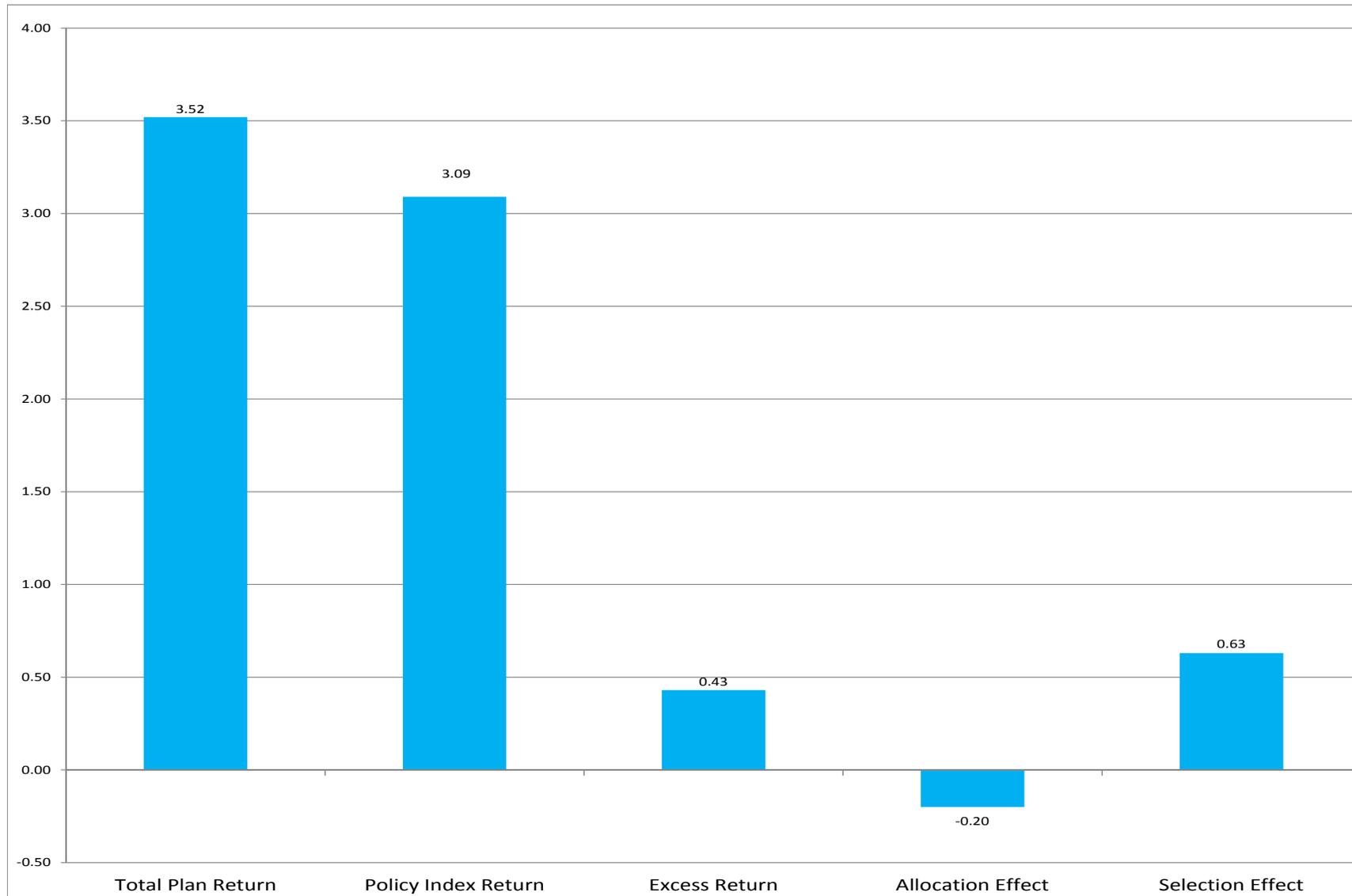


Portfolio Asset Allocation – Inflation Protection

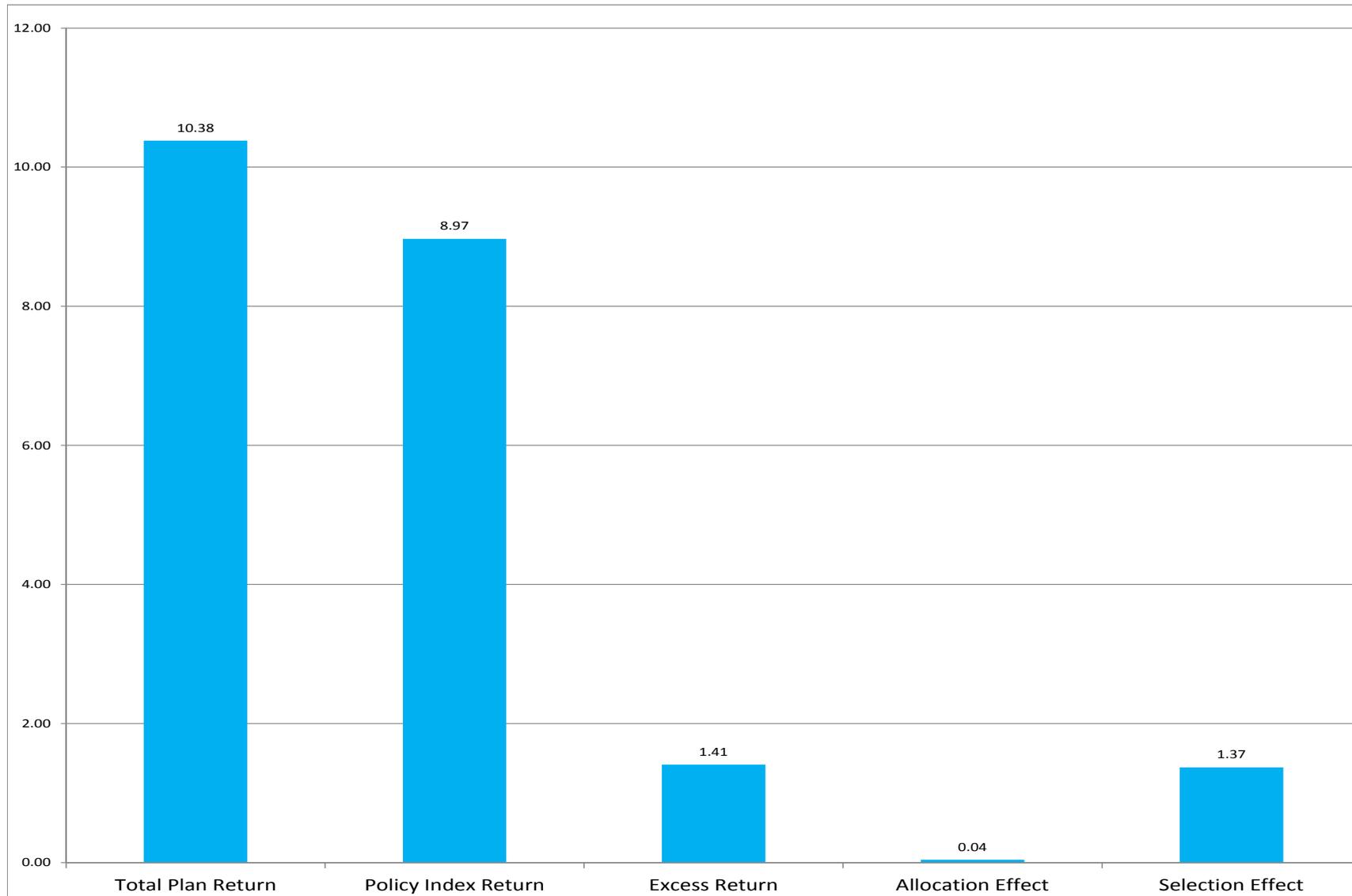


Note: On March 29, 2019 BERS' combined Fixed Income and Cash portfolios have a duration of 6 years. The duration of the Barclays US Aggregate Index was 5.8 years on that date.





Performance Attribution: Total Plan - 3 Years Ending: March 31, 2019



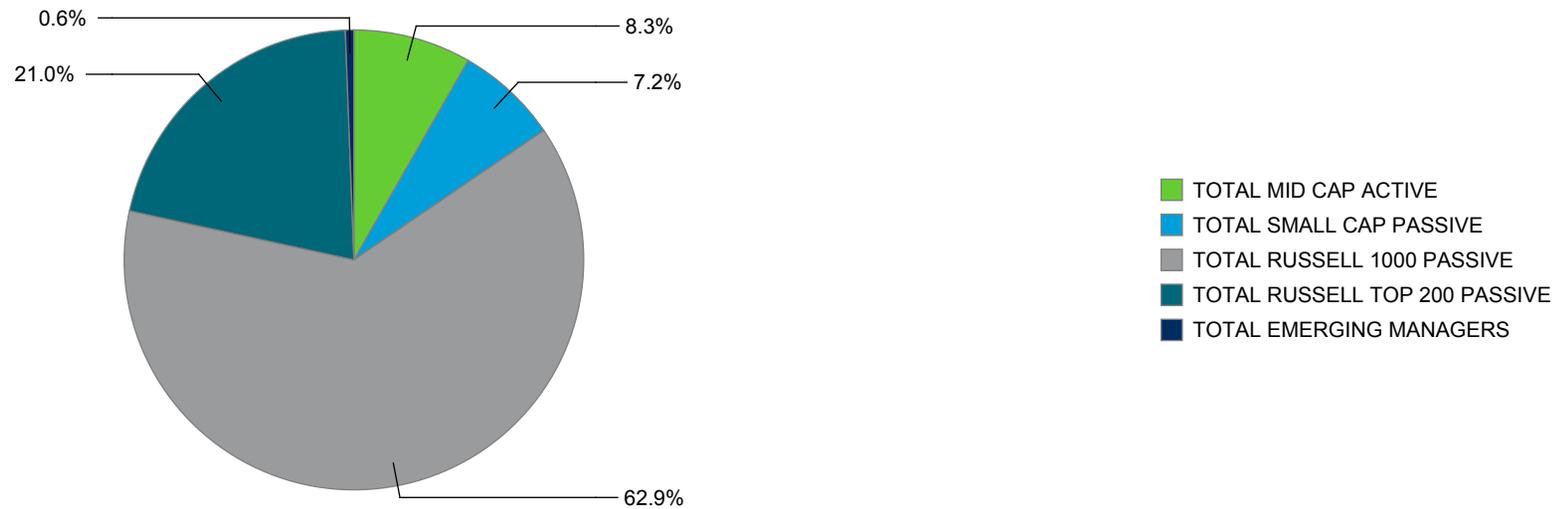
Allocation Effect - Asset Class Breakdown				
	<u>Quarter</u>	<u>FYTD</u>	<u>3 Years</u>	<u>Benchmark</u>
TOTAL BOARD OF EDUCATION	-0.48	-0.20	0.04	Board of Education Policy Benchmark
TOTAL DOMESTIC EQUITY	-0.17	-0.05	-0.03	RUSSELL 3000
TOTAL DEVELOPED EQUITY	-0.03	0.02	0.07	MSCI World ex USA IMI Net
TOTAL GLOBAL EQUITY	-0.01	-0.02	0.00	MSCI AC WORLD
TOTAL EMERGING MARKETS	0.00	-0.05	-0.05	MSCI Emerging Markets
TOTAL INTERNATIONAL FOF	0.00	0.00	0.00	MSCI ACWI Ex US IMI Net
TOTAL PRIVATE EQUITY	0.07	0.03	0.01	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE - CORE	0.01	0.00	-0.01	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE - NON CORE	0.01	0.00	0.00	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.00	0.00	0.00	CPI + 4%
TOTAL US TREASURY SHORT TERM	-0.45	0.09	-0.10	FTSE USBIG Treasury 1-3 Y Index
TOTAL ACTIVE GOVERNMENT	0.14	-0.08	0.22	NYC - Treasury Agency Plus Five
TOTAL INVESTMENT GRADE CREDIT	0.01	-0.03	-0.04	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.02	-0.02	0.03	FTSE MORTGAGE INDEX
TOTAL ETI	0.00	0.00	0.00	ETI Custom Benchmark
TOTAL HIGH YIELD	0.00	-0.04	0.02	High Yield Custom Benchmark
TOTAL BANK LOANS	0.00	0.00	-0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	-0.02	-0.01	0.01	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CASH	-0.09	-0.03	-0.13	

Selection Effect - Asset Class Breakdown				
	<u>Quarter</u>	<u>FYTD</u>	<u>3 Years</u>	<u>Benchmark</u>
TOTAL BOARD OF EDUCATION	1.42	0.63	1.37	Board of Education Policy Benchmark
TOTAL DOMESTIC EQUITY	0.08	-0.01	0.14	RUSSELL 3000
TOTAL DEVELOPED EQUITY	0.34	-0.13	0.72	MSCI World ex USA IMI Net
TOTAL GLOBAL EQUITY	0.08	0.03	0.01	MSCI AC WORLD
TOTAL EMERGING MARKETS	-0.09	-0.15	0.01	MSCI Emerging Markets
TOTAL INTERNATIONAL FOF	0.00	-0.01	0.00	MSCI ACWI Ex US IMI Net
TOTAL PRIVATE EQUITY	0.95	0.75	0.15	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE - CORE	0.01	0.06	0.02	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE - NON CORE	0.04	0.05	0.11	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.01	0.06	0.08	CPI + 4%
TOTAL US TREASURY SHORT TERM	0.00	0.00	0.00	FTSE USBIG Treasury 1-3 Y Index
TOTAL ACTIVE GOVERNMENT	0.00	0.00	0.00	NYC - Treasury Agency Plus Five
TOTAL INVESTMENT GRADE CREDIT	0.02	-0.01	0.01	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.01	0.00	0.01	FTSE MORTGAGE INDEX
TOTAL ETI	0.00	0.00	0.00	ETI Custom Benchmark
TOTAL HIGH YIELD	-0.02	0.00	0.01	High Yield Custom Benchmark
TOTAL BANK LOANS	0.00	-0.01	-0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	0.00	0.00	0.00	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CASH	0.00	-0.01	0.00	

Total Domestic Equity Asset Allocations: March 31, 2019



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL DOMESTIC EQUITY	\$2.0	31.9

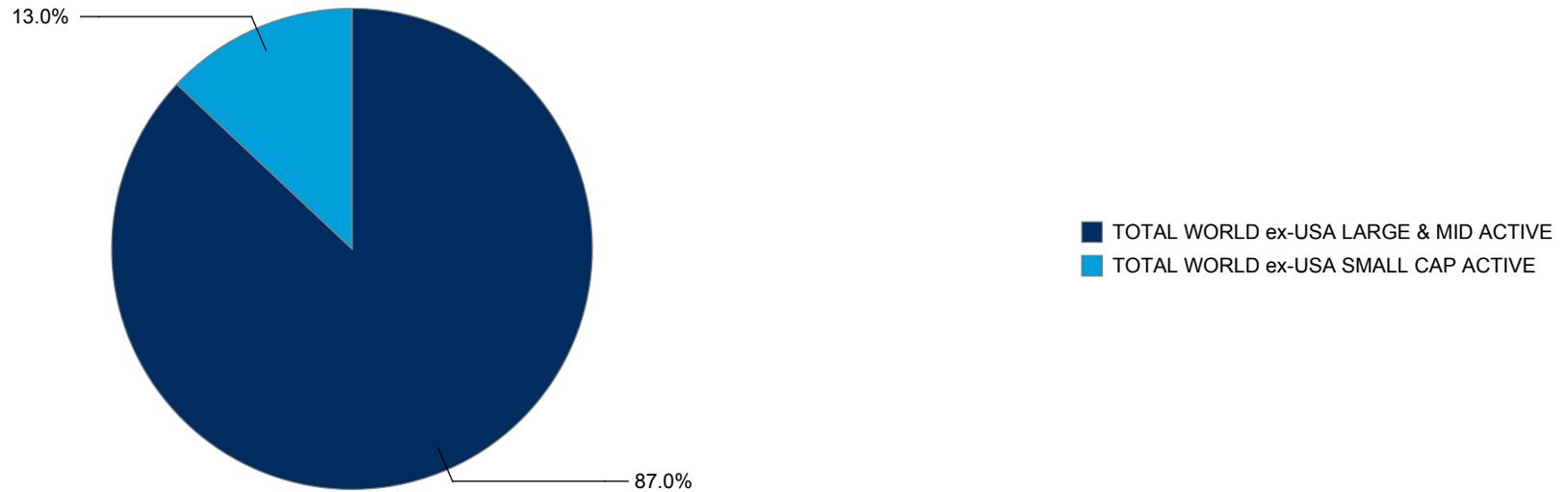


	<u>Policy Weight</u>	<u>Actual Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL MID CAP ACTIVE	7.0	8.3	1.3	20.3	16.5	3.8
TOTAL SMALL CAP PASSIVE	7.1	7.2	0.1	14.6	14.6	0.0
TOTAL RUSSELL 1000 PASSIVE	67.5	63.0	(4.5)	14.0	14.0	(0.0)
TOTAL RUSSELL TOP 200 PASSIVE	17.9	21.0	3.1	13.0	13.1	(0.0)
TOTAL EMERGING MANAGERS	0.6	0.6	(0.0)	14.3	14.6	(0.3)

World ex-USA Equity Asset Allocation: March 31, 2019



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL WORLD ex-USA	\$765.4	12.3

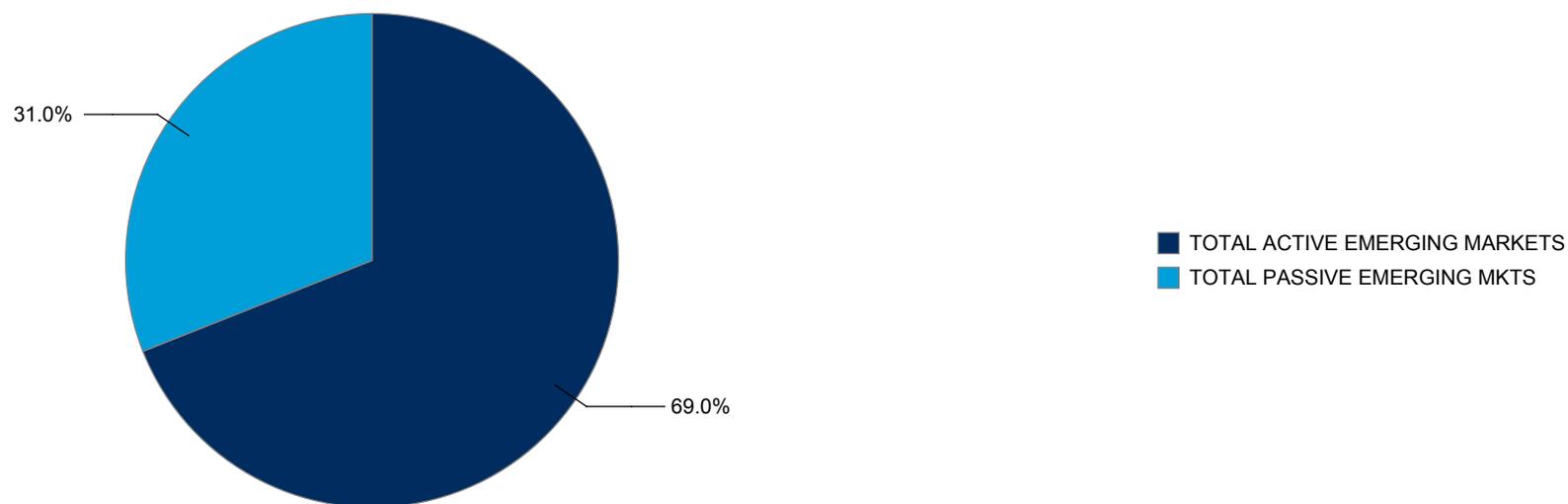


	<u>Asset Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL WORLD ex-USA LARGE & MID ACTIVE	87.04	14.05	10.45	3.60
TOTAL WORLD ex-USA SMALL CAP ACTIVE	12.95	10.21	9.92	0.28
TOTAL WORLD ex-USA	100.00	13.53	10.52	3.01

Emerging Markets Equity Asset Allocation: March 31, 2019



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL EMERGING MARKETS	\$444.8	7.1

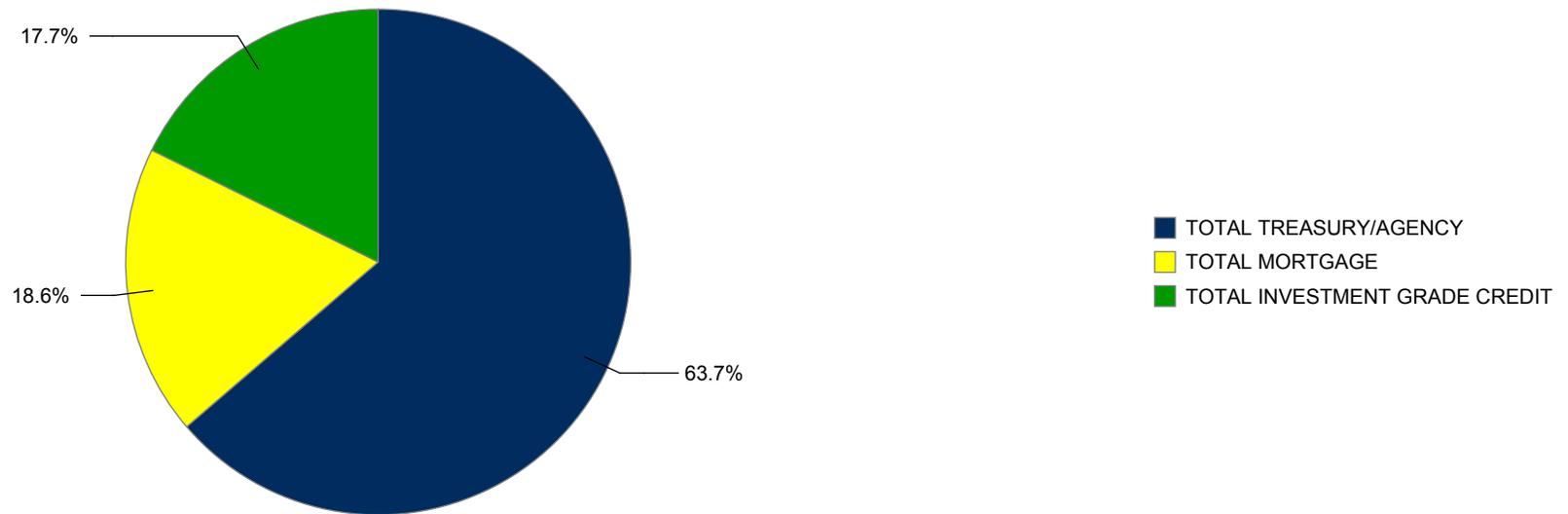


	<u>Asset Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL ACTIVE EMERGING MARKETS	68.96	8.10	9.92	(1.81)
TOTAL PASSIVE EMERGING MARKETS	31.04	10.04	9.92	0.13
TOTAL EMERGING MARKETS	100.00	8.70	9.92	(1.22)

Structured Fixed Income Asset Allocation: March 31, 2019



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL STRUCTURED + ETI	\$1.3	20.2

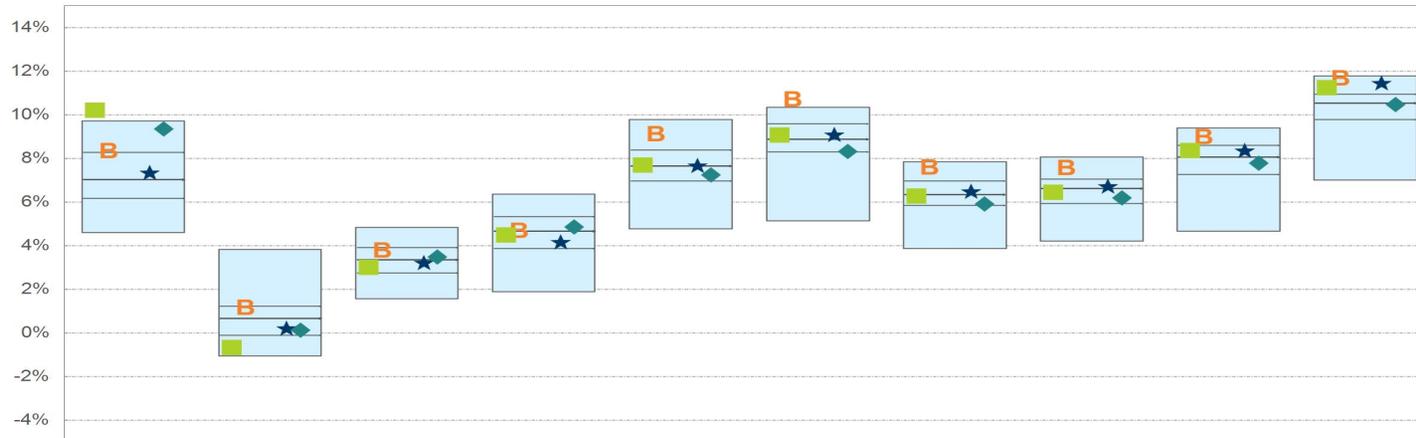


	<u>Policy Weight</u>	<u>Asset Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL TREASURY/AGENCY	61.54	63.67	2.13	2.56	3.37	(0.81)
TOTAL MORTGAGE	19.23	18.64	(0.59)	2.39	2.16	0.23
TOTAL INVESTMENT GRADE CREDIT	19.23	17.69	(1.54)	5.18	4.72	0.46



City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$1 Billion
Cumulative Periods Ending : March 31, 2019



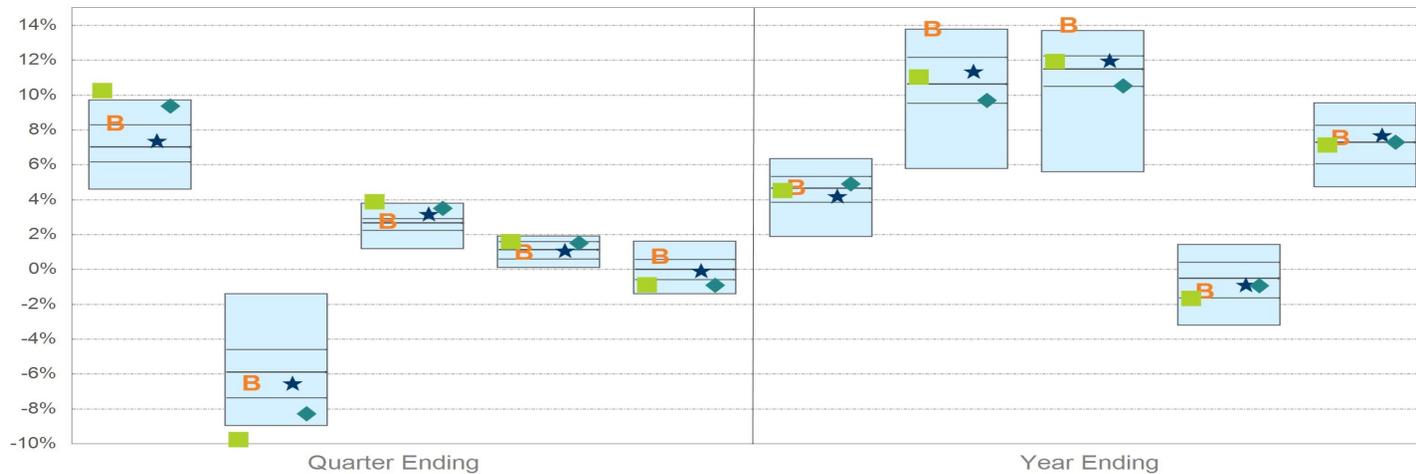
Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	9.72	3.83	4.84	6.37	9.78	10.36	7.86	8.07	9.40	11.79
25th	8.29	1.23	3.91	5.34	8.38	9.60	6.96	7.05	8.61	10.96
50th	7.04	0.67	3.35	4.67	7.66	8.88	6.35	6.62	8.06	10.55
75th	6.17	-0.11	2.75	3.86	6.97	8.31	5.86	5.93	7.27	9.78
95th	4.60	-1.06	1.57	1.89	4.77	5.13	3.86	4.22	4.67	7.02
No. Of Obs	66	65	65	65	64	64	64	64	64	61
B Total System - BOE	8.24 (28)	1.05 (29)	3.68 (31)	4.57 (54)	9.02 (12)	10.61 (2)	7.48 (10)	7.46 (12)	8.88 (13)	11.57 (7)
★ Board of Ed Policy Ben	7.23 (46)	0.07 (65)	3.09 (67)	4.04 (68)	7.56 (53)	8.97 (43)	6.37 (46)	6.61 (50)	8.24 (34)	11.33 (13)
■ Public Mkt Equiv 25	10.10 (4)	-0.81 (92)	2.87 (70)	4.36 (59)	7.58 (50)	8.96 (43)	6.16 (60)	6.32 (62)	8.24 (34)	11.13 (17)
◆ Public Mkt Equiv 35	9.22 (10)	0.00 (68)	3.35 (51)	4.74 (45)	7.12 (67)	8.19 (78)	5.79 (76)	6.06 (68)	7.66 (62)	10.34 (53)

Wilshire Trust Universe Comparison Service® (TUCS®)



City of New York Performance Comparison

Total Returns of Master Trusts - Public : Plans > \$1 Billion
Consecutive Time Periods: March 31, 2019



Percentile Rankings	Mar 19	Dec 18	Sep 18	Jun 18	Mar 18	Mar 19	Mar 18	Mar 17	Mar 16	Mar 15
5th	9.72	-1.39	3.81	1.91	1.63	6.37	13.78	13.72	1.45	9.56
25th	8.29	-4.58	2.93	1.60	0.58	5.34	12.17	12.26	0.41	8.27
50th	7.04	-5.89	2.67	1.13	0.00	4.67	10.64	11.49	-0.51	7.31
75th	6.17	-7.35	2.24	0.61	-0.57	3.86	9.53	10.50	-1.64	6.06
95th	4.60	-8.95	1.19	0.12	-1.40	1.89	5.79	5.60	-3.19	4.76
No. Of Obs	66	65	66	66	66	65	65	66	66	66
B Total System - BOE	8.24 (28)	-6.65 (65)	2.61 (53)	0.85 (70)	0.60 (22)	4.57 (54)	13.66 (7)	13.87 (2)	-1.39 (70)	7.40 (46)
★ Board of Ed Policy Ben	7.23 (46)	-6.68 (65)	3.02 (22)	0.92 (62)	-0.22 (64)	4.04 (68)	11.21 (37)	11.83 (37)	-1.04 (57)	7.54 (46)
■ Public Mkt Equiv 25	10.10 (4)	-9.91 (99)	3.72 (5)	1.45 (35)	-1.05 (87)	4.36 (59)	10.89 (43)	11.78 (39)	-1.83 (81)	6.98 (57)
◆ Public Mkt Equiv 35	9.22 (10)	-8.45 (84)	3.35 (19)	1.35 (40)	-1.06 (87)	4.74 (45)	9.55 (73)	10.36 (76)	-1.08 (59)	7.14 (53)

Wilshire Trust Universe Comparison Service® (TUCS®)

Actual and Estimated Fees

Through March 31, 2019



BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

INVESTMENT STYLE (EQUITIES)	Actual 2018							Estimates 2019			
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
Total US Equities	3,118.43	568.55	-	1.82	529.66	-	1,098.20	3.52	1,938.83	615.94	3.18
Mid Cap Active	149.30	442.10	-	29.61	529.66	35.48	971.75	65.09	167.75	501.57	29.90
Mid Cap Core	149.30	442.10	-	29.61	529.66	35.48	971.75	65.09	167.75	501.57	29.90
Active Emerging Managers (U.S. Equities)	11.76	54.68	-	46.50	-	-	54.68	46.50	12.56	61.88	49.25
Total US Active Equities	161.06	496.77	-	30.84	529.66	32.89	1,026.43	63.73	180.32	563.44	31.25
Small Cap Passive	164.10	7.10	-	0.43	-	-	7.10	0.43	157.67	6.61	0.42
Small Cap Passive	164.10	7.10	-	0.43	-	-	7.10	0.43	157.67	6.61	0.42
Russell / S&P Passive	566.63	26.76	-	0.47	-	-	26.76	0.47	0.77	-	-
Russell 1000 Growth Passive	566.63	26.76	-	0.47	-	-	26.76	0.47	0.77	-	-
Russell 1000 Value Passive	554.15	26.00	-	0.47	-	-	26.00	0.47	0.65	-	-
Russell 1000 Core Passive	1,285.41	6.74	-	0.05	-	-	6.74	0.05	1,176.24	23.24	0.20
Passive Russell 3000	-	-	-	-	-	-	-	-	-	-	-
Passive S&P 500	-	-	-	-	-	-	-	-	-	-	-
Passive Russell Top 200	387.09	5.18	-	0.13	-	-	5.18	0.13	423.19	22.65	0.54
Total US Passive Equities	2,957.37	71.78	-	0.24	-	-	71.78	0.24	1,758.51	52.50	0.30

Actual and Estimated Fees

Through March 31, 2019



BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018								Estimates 2019		
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30-18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
Total International Equities	1,317.97	3,501.48		26.57	-	-	3,501.48	26.57	1,227.38	3,077.96	25.08
Global Equity	50.05	32.52			-	-	32.52	6.50	100.90	450.44	44.64
Total Global Equities	50.05	32.52			-	-	32.52	6.50	100.90	450.44	44.64
Active EAFE Equities	780.61	2,101.42		26.92	-	-	2,101.42	26.92	720.35	1,778.99	24.70
World Ex-USA Large & Mid Active	662.19	1,715.37		25.90	-	-	1,715.37	25.90	612.91	1,426.67	23.28
World Ex-USA Small Cap Active	118.41	386.05		32.60	-	-	386.05	32.60	107.42	352.33	32.80
Total World Ex USA	0.01	-		-	-	-	-	-	0.01	-	-
Active Emerging Markets	338.65	1,132.20		33.43	-	-	1,132.20	33.43	310.11	1,048.63	33.81
Total Active Int'l Fund of Funds	62.12	215.53		34.70	-	-	215.53	34.70	60.81	212.63	34.97
Total Active International Equities	1,181.37	3,449.16		29.20	-	-	3,449.16	29.20	1,091.27	3,040.25	27.86
Int'l Passive Equities											
World Ex-USA Small Cap Passive	-	-		-	-	-	-	-	-	-	-
World Ex-USA Large & Mid Cap Passive	-	-		-	-	-	-	-	-	-	-
Passive Global	-	-		-	-	-	-	-	-	-	-
Passive Emerging Markets	136.60	52.32		3.83	-	-	52.32	3.83	136.11	37.71	2.77
Total Int'l Passive Equities	136.60	52.32		3.83	-	-	52.32	3.83	136.11	37.71	2.77
REITS Active Equities	-	-		-	-	-	-	-	-	-	-

Actual and Estimated Fees

Through March 31, 2019



BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018							Estimates 2019			
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
INVESTMENT STYLE (FIXED INCOME)											
Total Fixed Income	1,884.19	1,818.15		9.65	-	-	1,818.15	9.65	2,094.18	1,766.31	8.43
Structured Program	1,023.05	459.17		4.49	-	-	459.17	4.49	1,315.40	478.56	3.64
Government Treas/Agency Sector	573.00	164.63		2.87	-	-	164.63	2.87	903.28	206.87	2.29
Long Duration Treasury	-	-		-	-	-	-	-	-	-	-
Mortgage Sector	184.50	79.45		4.31	-	-	79.45	4.31	191.42	83.96	4.39
Investment Grade Credit Sector	265.55	215.09		8.10	-	-	215.09	8.10	220.70	187.74	8.51
Developing Managers	-	-		-	-	-	-	-	-	-	-
Emerging Managers	-	-		-	-	-	-	-	-	-	-
TIPS	266.64	13.08		0.49	-	-	13.08	0.49	287.43	14.50	0.50
Active TIPS Managers	-	-		-	-	-	-	-	-	-	-
Passive TIPS Managers	266.64	13.08		0.49	-	-	13.08	0.49	287.43	14.50	0.50
High Yield	388.07	876.53		22.59	-	-	876.53	22.59	276.45	788.23	28.51
Bank Loans	117.61	388.22		33.01	-	-	388.22	33.01	121.71	402.78	33.09
Convertible Bonds	-	-		-	-	-	-	-	-	-	-
ETI - Access - RBC	9.20	16.63		18.08	-	-	16.63	18.08	9.58	17.73	18.50
ETI - AFL-CIO HIT	15.97	64.51		40.39	-	-	64.51	40.39	15.87	64.51	40.65
Total Public Markets (Externally managed)	6,307.00	5,920.69		9.39	529.66	0.84	6,450.34	10.23	5,293.55	5,910.66	11.17
Other ETI Programs	9.10	-		-	-	-	-	-	9.28	-	-
In-House Short Term	54.55	-		-	-	-	-	-	58.46	-	-
Total Public Markets	6,370.64	5,920.69	-	9.29	529.66	0.83	6,450.34	10.13	5,361.29	5,910.66	11.02

Actual and Estimated Fees

Through March 31, 2019



BOARD OF EDUCATION RETIREMENT SYSTEM ACTUAL FEES FOR FISCAL YEAR ENDED JUNE 30, 2018 AND ESTIMATED FEES FOR FY 2019 UPDATED THROUGH SEPTEMBER 2018

	Actual 2018							Estimates 2019			
	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30- 18 (\$MM)	Mgmt. Fees (\$M)	Mgmt. Fees in BPS
INVESTMENT STYLE (PRIVATE MARKETS)											
Private Equity	327.67	4,852.60	1,844.09	204.38	1,404.32	42.86	8,101.02	247.23	367.21	4,909.51	133.70
Private Real Estate	333.61	3,542.06	1,464.12	150.06	2,619.98	78.53	7,626.16	228.59	344.23	3,827.96	111.20
Infrastructure	61.86	1,373.54	604.15	126.78	172.63	27.91	2,150.33	137.84	82.20	1,991.64	115.51
Total Private Markets	723.14	9,768.21	3,912.35	189.18	4,196.93	58.04	17,877.50	247.22	793.64	10,729.11	135.19
Total Overall	5,972.18	15,688.90	3,912.35	32.82	4,726.59	7.91	24,327.84	40.74	6,154.92	16,639.77	27.03

The overall carried interest and incentive fees paid by BOE in Fiscal Year 2018: 7.91 BPS

General Footnotes:

1) Private Markets data reflect: carried interest realized and/or Incentive fees as stated by its corresponding partnership. Management fees reported are inclusive of partnership expenses associated with the partnership for the stated fiscal year.

2) Infrastructure's expense data is based off the total committed amounts rather than current market value due to its early fund life juncture.

3) Estimated Fees for the Public Markets data does not take into account major rebalancing shifts and is calculated at a fixed NAV. Estimates fees for the Private Markets data is based solely off gross management fee data and is not inclusive of any offsets. Both estimates are considered to be equitably conservative and should be construed as such. Estimates for FY 2018 for Private Equity is provided by the Consultant.

Securities Lending Income

Through March 31, 2019



**NYC BOARD OF EDUCATION RETIREMENT SYSTEM
SECURITIES LENDING INCOME
March 31, 2019**

	U. S. FIXED INCOME	U. S. EQUITY	INTERNATIONAL EQUITY	TOTAL
1989	70,000	-	-	70,000
1990	79,000	-	-	79,000
1991	111,000	-	-	111,000
1992	122,000	11,000	-	133,000
1993	79,000	32,000	15,000	126,000
1994	93,000	77,000	20,000	190,000
1995	112,000	93,000	12,000	217,000
1996	99,000	76,000	27,000	202,000
1997	101,000	126,000	40,000	267,000
1998	111,000	170,000	60,000	341,000
1999	159,000	263,000	100,000	522,000
2000	193,000	310,000	97,000	600,000
2001	295,000	208,000	159,000	662,000
2002	209,000	143,000	152,000	504,000
2003	153,000	158,000	195,000	506,000
2004	226,000	255,000	174,000	655,000
2005	384,000	479,000	217,000	1,080,000
2006	303,000	734,000	246,000	1,283,000
2007	593,000	1,208,000	272,000	2,073,000
2008	2,514,000	2,266,000	451,000	5,231,000
2009	698,000	1,416,000	367,000	2,481,000
2010	246,000	729,000	326,000	1,301,000
2011	340,000	943,000	599,000	1,882,000
2012	516,000	1,144,000	495,000	2,155,000
2013	349,000	1,325,000	446,000	2,120,000
2014	287,000	512,000	1,387,000	2,186,000
2015	338,000	429,000	1,985,000	2,752,000
2016	418,000	1,585,000	1,685,000	3,688,000
2017	686,000	1,015,000	1,215,000	2,916,000
2018	582,738	682,039	954,109	2,218,886
2019 (3 months)	61,792	220,865	272,119	554,777
Since Inception	<u>10,528,531</u>	<u>16,609,905</u>	<u>11,968,228</u>	<u>39,106,663</u>

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

Appendix A

Consolidated Performance Report

Consolidated Performance Report

Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date
SYSTEM RETURN SUMMARY															
5 BERS-TOTAL PORTFOLIO - GROSS	6,245	100.00	8.24	3.68	8.24	(2.81)	19.09	9.44	(0.20)	6.64	10.61	7.46	11.57	8.78	07/01/1987
BERS - ESTIMATED INVESTMENT FEES			(0.08)	(0.16)	(0.08)	(0.17)	(0.27)	(0.25)	(0.24)	(0.25)	(0.23)	(0.24)			
EST MANAGEMENT FEES - PUBLIC MARKET (ACCRUAL)			(0.02)	(0.07)	(0.02)	(0.10)	(0.10)	(0.13)	(0.14)	(0.15)	(0.11)	(0.12)			
EST MANAGEMENT FEES - ALTERNATIVE MARKETS (CASH)			(0.06)	(0.09)	(0.06)	(0.07)	(0.17)	(0.12)	(0.10)	(0.10)	(0.12)	(0.12)			
EST INCENTIVE FEES															
EST OTHER FEES															
EST FEE OFFSETS															
BERS-TOTAL PORTFOLIO - NET MGR			8.17	3.52	8.17	(2.98)	18.82	9.19	(0.44)	6.39	10.38	7.23			
BOARD OF EDUCATION POLICY BENCHMARK			7.23	3.09	7.23	(3.19)	16.63	8.66	(0.08)	6.93	8.97	6.61	11.33		
EXCESS RETURN			0.94	0.43	0.94	0.21	2.18	0.53	(0.36)	(0.53)	1.41	0.62	0.23		
EQUITY RETURN DETAIL															
18 BERS-TOTAL EQUITY (INCLUDES PE & RA) - GROSS	4,215	67.50	10.77	3.29	10.77	(4.41)	25.58	10.72	(0.13)	7.08	13.54	9.16	14.50	9.26	08/01/1993
ESTIMATED INVESTMENT FEES			(0.10)	(0.21)	(0.10)	(0.21)	(0.34)	(0.30)	(0.30)	(0.28)	(0.29)	(0.29)			
EST MANAGEMENT FEES			(0.10)	(0.21)	(0.10)	(0.21)	(0.34)	(0.30)	(0.30)	(0.28)	(0.29)	(0.29)			
EST INCENTIVE FEES															
EST OTHER FEES															
EST FEE OFFSETS															
BERS-TOTAL EQUITY (INCL PE & RA) - NET MGR			10.66	3.08	10.66	(4.61)	25.24	10.42	(0.43)	6.81	13.24	8.87			
26 BERS-TOTAL DOMESTIC EQUITY - GROSS	1,990	31.86	14.32	4.69	14.32	(4.61)	21.47	12.69	0.51	11.27	14.00	10.37	16.04	9.89	09/01/1991
ESTIMATED INVESTMENT FEES			(0.01)	(0.02)	(0.01)	(0.03)	(0.04)	(0.12)	(0.12)	(0.13)	(0.06)	(0.08)			
BERS-TOTAL DOMESTIC EQUITY - NET MGR			14.32	4.67	14.32	(4.64)	21.43	12.57	0.39	11.14	13.94	10.29			
RUSSELL 3000 (DAILY)			14.04	4.70	14.04	(5.24)	21.13	12.74	0.48	12.56	13.48	10.36	16.00	9.74	
EXCESS RETURN			0.27	(0.03)	0.27	0.60	0.29	(0.17)	(0.09)	(1.42)	0.46	(0.07)	0.04	0.15	
36 BERS-TOTAL SMALL CAP - GROSS	142	2.28	14.60	(5.21)	14.60	(10.89)	14.47	21.28	(6.44)	3.20	12.92	6.24	14.28	6.87	04/01/2004
ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.08)	(0.15)	(0.00)	(0.05)			
BERS-TOTAL SMALL CAP - NET MGR			14.60	(5.21)	14.60	(10.90)	14.47	21.28	(6.52)	3.05	12.92	6.20			
RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)	14.65	21.31	(4.41)	4.89	12.92	7.05	15.36	8.04	
EXCESS RETURN			0.02	0.08	0.02	0.12	(0.18)	(0.03)	(2.11)	(1.85)	(0.00)	(0.86)	(1.08)	(1.16)	
46 BERS-TOTAL MID CAP - GROSS	165	2.64	20.38	3.80	20.38	(7.09)	25.33	12.90	2.56	10.77	16.39	11.67		14.42	10/01/2010
ESTIMATED INVESTMENT FEES			(0.09)	(0.23)	(0.09)	(0.28)	(0.27)	(0.62)	(0.55)	(0.41)	(0.39)	(0.44)			
BERS-TOTAL MID CAP - NET MGR			20.30	3.57	20.30	(7.37)	25.06	12.28	2.01	10.36	16.00	11.23			
RUSSELL MIDCAP (DAILY)			16.54	3.55	16.54	(9.06)	18.52	13.80	(2.44)	13.22	11.82	8.81		12.77	
EXCESS RETURN			3.76	0.02	3.76	1.69	6.54	(1.51)	4.45	(2.86)	4.19	2.42		1.65	
56 BERS-TOTAL RUSSELL 1000 - GROSS	1,254	20.07	13.97	5.69	13.97									9.71	04/01/2018
ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)									(0.00)	
BERS-TOTAL RUSSELL 1000 - NET MGR			13.97	5.69	13.97									9.71	
RUSSELL 1000 (DAILY)			14.00	5.54	14.00									9.30	
EXCESS RETURN			(0.03)	0.16	(0.03)									0.40	
66 BERS-TOTAL RUSSELL TOP 200 PASSIVE - GROSS	417	6.68	13.02	6.35	13.02									9.87	05/01/2018
ESTIMATED INVESTMENT FEES			0.00	(0.00)	0.00									(0.01)	
BERS-TOTAL RUSSELL TOP 200 PASSIVE - NET MGR			13.02	6.35	13.02									9.85	
RUSSELL TOP 200 INDEX (DAILY)			13.05	6.32	13.05									9.85	
EXCESS RETURN			(0.03)	0.03	(0.03)									0.01	
76 BERS-TOTAL EMERGING MANAGER- GROSS	12	0.19	14.47	(1.64)	14.47	(7.81)								7.03	05/01/2017
ESTIMATED INVESTMENT FEES			(0.14)	(0.37)	(0.14)	(0.46)								(0.44)	
BERS-TOTAL EMERGING MANAGER - NET MGR			14.33	(2.01)	14.33	(8.27)								6.59	
RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)								6.51	
EXCESS RETURN			(0.26)	3.29	(0.26)	2.74								0.09	

Consolidated Performance Report

Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date	
EQUITY RETURN DETAIL																
88	BERS-TOTAL WORLD ex-USA EQUITY - GROSS	765	12.26	13.60	(4.15)	13.60	(14.67)	35.49	6.19	(4.75)	(4.81)	12.29	4.61	11.77	7.67	11/01/1992
	ESTIMATED INVESTMENT FEES			(0.07)	(0.17)	(0.07)	(0.21)	(0.32)	(0.26)	(0.24)	(0.24)	(0.27)	(0.26)			
	BERS-TOTAL WORLD ex-USA EQUITY - NET MGR			13.53	(4.33)	13.53	(14.88)	35.18	5.93	(4.98)	(5.04)	12.01	4.36			
	NYC DEVELOPED EQUITY BENCHMARK			10.52	(3.22)	10.52	(14.68)	25.65	1.00	(0.81)	(4.90)	7.25	2.31	8.95	5.93	
	EXCESS RETURN			3.01	(1.11)	3.01	(0.19)	9.53	4.93	(4.17)	(0.14)	4.77	2.04	2.82	1.74	
98	BERS-TOTAL WORLD ex-USA LARGE & MID ACTIVE - GROSS	666	10.67	14.12	(3.53)	14.12	(13.90)	35.81	6.12	(6.35)	(4.83)	12.96	4.67		4.97	11/01/2013
	ESTIMATED INVESTMENT FEES			(0.06)	(0.17)	(0.06)	(0.20)	(0.31)	(0.25)	(0.22)	(0.23)	(0.26)	(0.24)		(0.25)	
	BERS-TOTAL WORLD ex-USA LARGE & MID ACTIVE - NET MGR			14.05	(3.70)	14.05	(14.09)	35.51	5.87	(6.57)	(5.05)	12.71	4.43		4.73	
	NYC CUSTOM WORLD EX-USA LG & MID ACT INDEX			10.45	(2.41)	10.45	(14.09)	25.18	1.00	(0.81)	(4.90)	7.34	2.37		2.74	
	EXCESS RETURN			3.60	(1.29)	3.60	(0.00)	10.32	4.87	(5.76)	(0.15)	5.36	2.06		1.99	
118	BERS-TOTAL WORLD ex-USA SMALL CAP ACTIVE - GROSS	99	1.59	10.29	(7.96)	10.29	(18.96)	38.82	6.76	9.04	(4.60)	9.56	5.62		8.26	05/01/2013
	ESTIMATED INVESTMENT FEES			(0.09)	(0.23)	(0.09)	(0.27)	(0.44)	(0.35)	(0.36)	(0.32)	(0.36)	(0.35)			
	BERS-TOTAL WORLD ex-USA SMALL CAP ACTIVE - NET MGR			10.21	(8.18)	10.21	(19.22)	38.38	6.41	8.68	(4.92)	9.21	5.28			
	S&P EPAC SMALL CAP USD NET			9.92	(8.54)	9.92	(18.58)	33.47	1.34	8.58	(3.43)	6.75	4.12		6.58	
	EXCESS RETURN			0.28	0.36	0.28	(0.65)	4.91	5.07	0.09	(1.49)	2.46	1.16		1.68	
128	BERS-TOTAL ACTIVE EMERGING MARKETS - GROSS	307	4.91	8.19	(2.15)	8.19	(16.99)	40.92	13.14	(14.83)	4.14	11.21	4.69	9.31	8.26	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.09)	(0.25)	(0.09)	(0.28)	(0.47)	(0.40)	(0.31)	(0.37)	(0.38)	(0.36)			
	BERS-TOTAL ACTIVE EMERGING MARKETS - NET MGR			8.10	(2.40)	8.10	(17.27)	40.45	12.74	(15.14)	3.77	10.83	4.33			
	MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)	10.68	3.68	8.94	7.92	
	EXCESS RETURN			(1.81)	(3.00)	(1.81)	(2.70)	3.16	1.55	(0.22)	5.96	0.15	0.65	0.37	0.34	
138	BERS-TOTAL PASSIVE EMERGING MARKETS - GROSS	138	2.21	10.05	0.73	10.05	(14.45)	37.41						11.68	12/01/2016	
	ESTIMATED INVESTMENT FEES			(0.01)	(0.02)	(0.01)	0.01	(0.15)						(0.05)		
	BERS-TOTAL PASSIVE EMERGING MARKETS - NET MGR			10.04	0.71	10.04	(14.45)	37.26						11.63		
	MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28						11.61		
	EXCESS RETURN			0.13	0.12	0.13	0.12	(0.02)						0.01		
148	BERS-TOTAL INTERNATIONAL FUND OF FUNDS - GROSS	59	0.95	10.10	(3.30)	10.10	(14.23)							4.51	05/01/2017	
	ESTIMATED INVESTMENT FEES			(0.09)	(0.25)	(0.09)	(0.30)							(0.36)		
	BERS-TOTAL INTERNATIONAL FUND OF FUNDS - NET MGR			10.00	(3.55)	10.00	(14.53)							4.15		
	MSCI ACWI EX USA IMI NET			10.30	(2.42)	10.30	(14.76)							4.51		
	EXCESS RETURN			(0.30)	(1.13)	(0.30)	0.23							(0.37)		
158	BERS-TOTAL GLOBAL EQUITY - GROSS	103	1.65	17.52	3.00	17.52								2.12	06/01/2018	
	ESTIMATED INVESTMENT FEES			(0.19)	(0.43)	(0.19)								(0.47)		
	BERS-TOTAL GLOBAL EQUITY - NET MGR			17.32	2.57	17.32								1.65		
	MSCI AC WORLD (DAILY CONST)			12.18	2.06	12.18								1.50		
	EXCESS RETURN			5.15	0.51	5.15								0.14		

Consolidated Performance Report

Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date	
EQUITY RETURN DETAIL																
170	BERS-TOTAL PRIVATE EQUITY (TIME WEIGHTED)	401	6.42	0.28	11.01	0.28	20.44	19.22	10.42	14.26	22.16	16.18	17.20	12.89	7.52	07/01/2006
	NYC R3000 +3% LAGGED			(13.63)	(2.48)	(13.63)	21.06	22.22	18.37	2.49	21.24	12.22	11.13	17.02	11.62	
	EXCESS RETURN			13.91	13.48	13.91	(0.62)	(3.00)	(7.96)	11.77	0.92	3.96	6.07	(4.13)	(4.10)	
180	BERS-TOTAL PRIVATE REAL ESTATE (TIME WEIGHTED)	343	5.49	2.41	7.73	2.41	11.95	13.57	10.75	16.06	13.67	12.05	13.00	12.07	12/01/2010	
	NCREIF NFI-ODCE NET + 100 BP			1.45	5.43	1.45	8.43	7.72	8.86	15.08	12.56	8.07	10.26	12.00		
	EXCESS RETURN			0.96	2.29	0.96	3.52	5.85	1.89	0.98	1.10	3.98	2.75	0.08		
190	BERS-TOTAL INFRASTRUCTURE (TIME WEIGHTED)	110	1.76	2.02	9.31	2.02	14.77	24.82	9.26	11.63	18.85	16.21	18.64	15.12	12/01/2013	
	CPI + 4%			1.55	4.35	1.55	6.03	6.20	6.17	4.69	4.69	6.30	5.56	5.62		
	EXCESS RETURN			0.47	4.96	0.47	8.73	18.62	3.09	6.94	14.17	9.91	13.08	9.50		

Consolidated Performance Report

Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014	3 Year	5 Year	10 Year	ITD	Inception Date
FIXED INCOME RETURN DETAIL															
202 BERS-TOTAL FIXED INCOME - GROSS	1,963	31.43	3.60	4.16	3.60	(0.40)	4.47	6.65	(0.68)	5.69	3.68	3.32	5.80	5.05	04/01/2004
ESTIMATED INVESTMENT FEES			(0.03)	(0.07)	(0.03)	(0.10)	(0.13)	(0.13)	(0.13)	(0.16)	(0.12)	(0.13)			
EST MANAGEMENT FEES			(0.03)	(0.07)	(0.03)	(0.10)	(0.13)	(0.13)	(0.13)	(0.16)	(0.12)	(0.13)			
EST INCENTIVE FEES															
EST OTHER FEES															
EST FEE OFFSETS															
BERS-TOTAL FIXED INCOME - NET MGR			3.57	4.08	3.57	(0.50)	4.34	6.51	(0.81)	5.53	3.56	3.19			
210 BERS-TOTAL STRUCTURED FIXED INCOME - GROSS	1,226	19.64	3.00	4.60	3.00	(0.36)	4.19	3.95	0.26	7.66	2.46	3.19	4.90	7.43	01/01/1985
ESTIMATED INVESTMENT FEES			(0.01)	(0.03)	(0.01)	(0.04)	(0.05)	(0.06)	(0.06)	(0.08)	(0.05)	(0.06)			
BERS-TOTAL STRUCTURED FIXED INCOME - NET MGR			2.99	4.58	2.99	(0.40)	4.14	3.89	0.20	7.58	2.41	3.14			
NYC CUSTOM STRUCTURED INDEX-BERS			3.41	5.34	3.41	(0.21)	4.48								
EXCESS RETURN			(0.41)	(0.76)	(0.41)	(0.19)	(0.34)								
220 BERS-TOTAL TIPS - GROSS	294	4.70	3.24	1.93	3.24	(1.28)	3.05	4.78	(0.83)	3.37	1.74	2.02	3.54	3.73	06/01/2005
ESTIMATED INVESTMENT FEES			(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.02)	(0.10)	(0.01)	(0.02)			
BERS-TOTAL TIPS - NET MGR			3.24	1.92	3.24	(1.29)	3.04	4.78	(0.85)	3.27	1.74	1.99			
BBG BARC GBL INF-LK: US TIPS (DLY)			3.19	1.92	3.19	(1.26)	3.01	4.68	(1.44)	3.64	1.70	1.94	3.41	3.57	
EXCESS RETURN			0.04	0.01	0.04	(0.03)	0.04	0.09	0.58	(0.37)	0.04	0.05	0.13	0.16	
230 BERS-TOTAL HIGH YIELD - GROSS	284	4.55	7.00	4.93	7.00	(1.64)	7.17	15.96	(4.34)	3.09	8.40	4.53	10.38	5.97	08/01/1997
ESTIMATED INVESTMENT FEES			(0.09)	(0.25)	(0.09)	(0.30)	(0.36)	(0.36)	(0.32)	(0.34)	(0.35)	(0.34)			
BERS-TOTAL HIGH YIELD - NET MGR			6.91	4.68	6.91	(1.94)	6.81	15.60	(4.66)	2.75	8.06	4.19			
HIGH YIELD CUSTOM BENCHMARK			7.26	4.85	7.26	(2.34)	7.03	15.48	(4.21)	2.78	7.91	4.36	9.53	5.97	
EXCESS RETURN			(0.35)	(0.17)	(0.35)	0.40	(0.22)	0.12	(0.45)	(0.04)	0.15	(0.17)	0.85	(0.00)	
240 BERS- TOTAL BANK LOANS - GROSS	122	1.95	3.85	2.26	3.85	0.71	4.81	8.86	0.46	2.34	5.87	3.90		4.41	12/01/2012
ESTIMATED INVESTMENT FEES			(0.08)	(0.25)	(0.08)	(0.33)	(0.34)	(0.38)	(0.34)	(0.35)	(0.35)	(0.35)			
BERS-TOTAL BANK LOANS - NET MGR			3.77	2.01	3.77	0.38	4.47	8.48	0.12	1.99	5.52	3.55			
CSFB LEVERAGED LOAN INDEX			3.78	2.53	3.78	1.14	4.25	9.88	(0.38)	2.06	5.87	3.83		4.32	
EXCESS RETURN			(0.01)	(0.52)	(0.01)	(0.76)	0.22	(1.39)	0.51	(0.07)	(0.35)	(0.27)		0.09	
250 BERS-TOTAL TARGETED INVESTMENTS (NO CASH) - GROSS	36	0.58	2.85	5.51	2.85	1.08	4.37	2.60	3.60	7.31	2.46	3.96	4.14	6.71	12/01/1984
ESTIMATED INVESTMENT FEES			(0.06)	(0.19)	(0.06)	(0.25)	(0.26)	(0.29)	(0.30)	(0.35)	(0.26)	(0.28)	(0.33)	(0.12)	
BERS-TOTAL TARGETED INVESTMENTS (NO CASH)- NET MGR			2.79	5.32	2.79	0.83	4.11	2.31	3.30	6.96	2.20	3.68	3.82	6.59	
BERS CUSTOM BENCHMARK (NO CASH)			2.50	4.49	2.50	0.85	3.19	2.43	1.18	5.76	2.12	2.84	3.52		
EXCESS RETURN			0.29	0.83	0.29	(0.02)	0.92	(0.12)	2.12	1.20	0.08	0.85	0.30		
CASH SUMMARY															
262 Short Term BERS - GROSS	67	1.07	0.62	1.72	0.62	1.92	1.10	0.55	0.39	0.28	1.33	0.96	0.78	2.01	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	0.00		
Short Term BERS - NET MGR			0.62	1.72	0.62	1.92	1.10	0.55	0.39	0.28	1.33	0.96	0.78		
266 KKR Cash Account	0	0.00													
268 Cash Account	0	0.00													
270 Securities Lending	0	0.00													

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

Appendix B

Public Markets Manager Performance Detail

Public Markets Manager Performance Detail

Net Returns Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
EQUITY SUMMARY										
US EQUITY										
BlackRock US SCG R2000	74	1.18	17.14	(3.01)	17.14	(9.14)	22.26	11.29	(1.30)	5.50
RUSSELL 2000 GROWTH DAILY			17.14	(3.15)	17.14	(9.31)	22.17	11.32	(1.38)	5.60
Excess			(0.01)	0.14	(0.01)	0.17	0.09	(0.02)	0.08	(0.11)
BlackRock US SCV R2000	69	1.10	11.99	(7.47)	11.99	(12.79)	7.34	31.71	(7.38)	4.11
RUSSELL 2000 VALUE DAILY			11.93	(7.51)	11.93	(12.86)	7.84	31.74	(7.47)	4.22
Excess			0.07	0.04	0.07	0.08	(0.49)	(0.03)	0.09	(0.11)
Wellington US MCC	165	2.64	20.30	3.57	20.30	(7.37)	25.06	12.28	1.76	10.96
S&P MID CAP 400			14.49	(1.63)	14.49	(11.08)	16.24	20.74	(2.18)	9.77
Excess			5.81	5.20	5.81	3.71	8.82	(8.45)	3.94	1.19
BlackRock US LC R1000 Growth	0	0.00					30.25	7.06	5.78	12.91
RUSSELL 1000 GROWTH - DAILY							30.21	7.08	5.67	13.05
Excess							0.03	(0.02)	0.12	(0.14)
BlackRock US LC R1000 Value	0	0.00					13.66	17.31	(3.81)	13.39
RUSSELL 1000 VALUE (DAILY)							13.66	17.34	(3.83)	13.45
Excess							(0.01)	(0.03)	0.01	(0.06)
BlackRock US LMC R1000 Core	1,254	20.07	13.98	5.70	13.98					
RUSSELL 1000 (DAILY)			14.00	5.54	14.00					
Excess			(0.02)	0.16	(0.02)					
SSGA US LMC Top 200 Core	417	6.68	13.02	6.35	13.02					
RUSSELL TOP 200 INDEX (DAILY)			13.05	6.32	13.05					
Excess			(0.03)	0.03	(0.03)					

Public Markets Manager Performance Detail



Net Returns Through March 31, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
EMERGING MANAGERS										
BERS-TOTAL EMERGING MANAGERS	12	0.19	14.33	(2.01)	14.33	(8.27)				
RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)				
Excess			(0.26)	3.29	(0.26)	2.74				
BERS-TOTAL LEGATO										
BERS-TOTAL LEGATO	12	0.19	14.33	(2.01)	14.33	(8.27)				
RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)				
Excess			(0.26)	3.29	(0.26)	2.74				
NON - US EQUITY										
Sprucegrove WorldxUS LMCC	328	5.26	9.40	(1.95)	9.40	(13.67)	27.15	11.14	(9.56)	(3.19)
NYC Developed Value Benchmark			10.45	(2.41)	10.45	(14.09)	22.77	5.02	(5.68)	(5.39)
Excess			(1.05)	0.47	(1.05)	0.42	4.38	6.12	(3.87)	2.21
Baillie Gifford WorldxUS LMCC	338	5.41	19.04	(6.07)	19.04	(15.35)	44.17	0.70	(3.81)	(6.66)
NYC Developed Growth Benchmark			10.45	(2.41)	10.45	(14.09)	27.77	(3.04)	4.09	(4.43)
Excess			8.59	(3.66)	8.59	(1.26)	16.40	3.74	(7.90)	(2.23)
Acadian WorldxUS SCC	73	1.17	10.29	(8.12)	10.29	(19.22)	38.38	6.41	8.68	(4.92)
S&P EPAC Small Cap USD NET			9.92	(8.54)	9.92	(18.58)	33.47	1.34	8.58	(3.43)
Excess			0.36	0.43	0.36	(0.65)	4.91	5.07	0.09	(1.49)
Algert EAFE SCC	26	0.42								
MSCI EAFE SMALL CAP NET (DAILY)										
Excess										
EMERGING MARKETS										
Acadian EM	307	4.91	8.10	(2.40)	8.10	(17.27)	40.45	12.74	(15.14)	3.77
MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)
Excess			(1.81)	(3.00)	(1.81)	(2.70)	3.16	1.55	(0.22)	5.96

Public Markets Manager Performance Detail



Net Returns Through March 31, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
BlackRock MSCI EM Core	138	2.21	10.04	0.71	10.04	(14.45)	37.25			
MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28			
Excess			0.13	0.12	0.13	0.12	(0.03)			
INTERNATIONAL FOF										
BERS-TOTAL INTERNATIONAL FOF	59	0.95	10.00	(3.55)	10.00	(14.53)				
MSCI ACWI ex USA IMI Net			10.30	(2.42)	10.30	(14.76)				
Excess			(0.30)	(1.13)	(0.30)	0.23				
BERS-TOTAL INTERNATIONAL FIS	59	0.95	10.00	(3.55)	10.00	(14.53)				
MSCI ACWI ex USA IMI Net			10.30	(2.42)	10.30	(14.76)				
Excess			(0.30)	(1.13)	(0.30)	0.23				
GLOBAL EQUITY										
Morgan Stanley WorldxUS	50	0.80	19.36	(0.16)	19.36					
MSCI AC WORLD (Daily Const)			12.18	2.06	12.18					
Excess			7.18	(2.22)	7.18					
Fiera WorldxUS	53	0.85	15.47		15.47					
MSCI World Index			12.48		12.48					
Excess			2.99		2.99					
FIXED INCOME SUMMARY										
STRUCTURED FIXED INCOME										
BlackRock Mortgages	199	3.19	2.32	4.27	2.32	1.00	3.06	2.32	1.73	
FTSE MORTGAGE INDEX			2.16	4.21	2.16	1.01	2.47	1.59	1.56	
Excess			0.15	0.06	0.15	(0.01)	0.59	0.73	0.17	
Prudential Credit	120	1.92	4.74	5.74	4.74	(1.95)	6.21	5.86	(0.22)	7.20
NYC - Investment Grade Credit			4.72	5.82	4.72	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.02	(0.08)	0.02	(0.05)	0.17	0.30	0.43	0.16

Public Markets Manager Performance Detail

Net Returns Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Taplin Credit	103	1.65	5.70	5.41	5.70	(3.42)	7.18	8.02	(3.01)	8.68
NYC - Investment Grade Credit			4.72	5.82	4.72	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.97	(0.41)	0.97	(1.52)	1.14	2.46	(2.36)	1.64
SSGA LI Treasury	529	8.47	3.38	5.51	3.38	(0.18)	4.92	1.23	0.45	12.21
NYC - Treasury Agency Plus Five			3.37	5.57	3.37	(0.05)	4.66	1.21	0.72	12.38
Excess			0.01	(0.06)	0.01	(0.12)	0.27	0.01	(0.27)	(0.16)
SSGA IT Treasury 1-10Y	5	0.08								
FTSE USBIG Treasury/Agency 1-10 y										
Excess										
SSGA ST Treasury 1-3Y	270	4.33	0.98	2.47	0.98	1.51	0.45			
FTSE USBIG Treasury 1-3 Y Index			0.99	2.48	0.99	1.56	0.42			
Excess			(0.01)	(0.00)	(0.01)	(0.05)	0.03			
HIGH YIELD										
Loomis Sayles High Yield	0	0.00					7.02	19.92	(7.07)	2.83
NYC-Loomis (BoA MLMSTII 7-03/BB&B PRIOR)							7.48	17.49	(4.64)	2.50
Excess							(0.46)	2.44	(2.43)	0.33
Mackay Shields High Yield	142	2.28	6.74		6.74					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			(0.51)		(0.51)					
Nomura High Yield	141	2.27	7.18		7.18					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			(0.07)		(0.07)					
Shenkman High Yield	0	0.00					6.60	11.62	(1.97)	2.66
High Yield Custom Benchmark							7.03	15.48	(4.21)	2.78
Excess							(0.43)	(3.85)	2.24	(0.13)

Public Markets Manager Performance Detail



Net Returns Through March 31, 2019

	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Transition High Yield	1	0.01								
BANK LOANS										
Barings Bank Loans	122	1.95	3.77	2.01	3.77	0.38	4.47	8.48	0.12	1.99
CSFB LEVERAGED LOAN INDEX			3.78	2.53	3.78	1.14	4.25	9.88	(0.38)	2.06
Excess			(0.01)	(0.52)	(0.01)	(0.76)	0.22	(1.39)	0.51	(0.07)
TIPS										
SSGA TIPS	294	4.70	3.24	1.92	3.24	(1.29)	3.04	4.78		
BBG BARC Gbl Inf-Lk: US TIPS (Dly)			3.19	1.92	3.19	(1.26)	3.01	4.68		
Excess			0.04	0.01	0.04	(0.03)	0.04	0.09		
ECONOMICALLY TARGETED INVESTMENTS										
RBC Access MBS	9	0.15	2.50	4.43	2.50	0.49	2.64	1.61	1.83	6.66
Access RBC Benchmark			2.01	4.03	2.01	1.17	1.96	1.52	1.40	5.08
Excess			0.49	0.40	0.49	(0.69)	0.69	0.09	0.43	1.58
AFL-CIO Housing Investment Trust	17	0.27	2.65	4.47	2.65	0.16	3.17	1.94	1.13	6.10
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97
Excess			(0.29)	(0.18)	(0.29)	0.15	(0.38)	(0.71)	0.58	0.14
CPC Construction Facility	1	0.01	1.32	3.40	1.32	4.14	6.05	(3.95)	12.90	
CPC CONST BENCHMARK			1.06	3.14	1.06	3.99	3.34	3.03	2.90	
Excess			0.26	0.26	0.26	0.15	2.72	(6.99)	10.01	
BOA PPAR FNMA	1	0.02	3.40	7.43	3.40	2.33	5.21	4.07	42.03	13.31
FNMA Plus 85bps			2.33	4.80	2.33	1.86	3.61	2.38	2.50	7.13
Excess			1.07	2.63	1.07	0.47	1.60	1.69	39.53	6.19
Citibank PPAR FNMA	1	0.02	3.24	8.33	3.24	2.63	5.26	3.71	6.69	25.71
FNMA Plus 85bps			2.33	4.80	2.33	1.86	3.61	2.38	2.50	7.13
Excess			0.91	3.53	0.91	0.77	1.65	1.33	4.20	18.58

Public Markets Manager Performance Detail

Net Returns Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
Citibank PPAR GNMA	0	0.00	2.73	7.40	2.73	1.90	3.10	2.78	5.08	15.37
GNMA Plus 65bps			2.32	4.68	2.32	1.63	2.53	2.28	2.02	6.65
Excess			0.40	2.73	0.40	0.27	0.57	0.50	3.06	8.72
CFSB PPAR GNMA	0	0.00	2.64	6.73	2.64	0.99	3.83	3.21	5.90	15.34
GNMA Plus 65bps			2.32	4.68	2.32	1.63	2.53	2.28	2.02	6.65
Excess			0.32	2.05	0.32	(0.65)	1.30	0.93	3.88	8.69
CPC PPAR FNMA	1	0.02	3.78	8.40	3.78	2.31	5.06	6.15	8.96	13.91
FNMA Plus 85bps			2.33	4.80	2.33	1.86	3.61	2.38	2.50	7.13
Excess			1.46	3.61	1.46	0.45	1.45	3.77	6.46	6.78
JPMC PPAR FNMA	3	0.05	3.24	7.45	3.24	1.68	9.96	7.94	6.18	12.06
FNMA Plus 85bps			2.33	4.80	2.33	1.86	3.61	2.38	2.50	7.13
Excess			0.91	2.66	0.91	(0.18)	6.35	5.56	3.68	4.93
LIIF PPAR FNMA	2	0.03	3.35	8.21	3.35	2.27	9.55	5.03	6.29	38.12
FNMA Plus 85bps			2.33	4.80	2.33	1.86	3.61	2.38	2.50	7.13
Excess			1.02	3.41	1.02	0.41	5.94	2.65	3.79	30.99
LIIF PPAR GNMA	0	0.00	1.92	5.48	1.92	2.53	2.52	3.88	3.92	9.74
GNMA Plus 65bps			2.32	4.68	2.32	1.63	2.53	2.28	2.02	6.65
Excess			(0.40)	0.81	(0.40)	0.89	(0.01)	1.61	1.91	3.09
LISC PPAR FNMA	0	0.00	3.72		3.72					
FNMA Plus 85bps			2.33		2.33					
Excess			1.39		1.39					
NCBCI PPAR FNMA	0	0.00	2.52	7.66	2.52	2.00	1.75	3.46	4.97	14.93
FNMA Plus 85bps			2.33	4.80	2.33	1.86	3.61	2.38	2.50	7.13
Excess			0.19	2.87	0.19	0.15	(1.86)	1.07	2.47	7.81

Public Markets Manager Performance Detail

Net Returns Through March 31, 2019



	Market Value (\$MM)	% of Total	3 Month	FYTD	CYTD	2018	2017	2016	2015	2014
NCBCI PPAR GNMA	0	0.00	2.47	6.60	2.47	1.23	3.01	3.51	5.53	16.66
GNMA Plus 65bps			2.32	4.68	2.32	1.63	2.53	2.28	2.02	6.65
Excess			0.15	1.92	0.15	(0.41)	0.48	1.23	3.52	10.01
Wells Fargo PPAR FNMA	0	0.00	9.99	16.43	9.99					
FNMA Plus 85bps			2.33	4.80	2.33					
Excess			7.67	11.64	7.67					
CASH										
Short Term BERS	67	1.07	0.62	1.72	0.62	1.92	1.10	0.55	0.39	0.28
91 DAY TREASURY BILL (DAILY)			0.60	1.66	0.60	1.87	0.86	0.33	0.05	0.03
Excess			0.02	0.05	0.02	0.05	0.24	0.23	0.34	0.24
KKR Cash Account	0	0.00								
Cash Account	0	0.00								
Securities Lending	0	0.00								

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

Appendix C

Alternative Assets Manager Performance Detail

Alternative Assets Manager Performance Detail

Through December 31, 2018



	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
TOTAL PRIVATE EQUITY		788,683,066	465,146,785	281,416,672	385,434,578	1.43	11.6%
TOTAL ACTIVE							
Mesirow Financial Private Equity Partnership Fund III, L.P.	2005	57,000,000	55,100,648	79,831,991	12,419,233	1.67	8.3%
Mesirow Financial Private Equity Partnership Fund IV, L.P.	2006	25,000,000	22,973,154	27,497,289	12,128,219	1.72	10.3%
New York Fairview Private Equity Fund, L.P.	2006	19,000,000	17,320,307	18,034,842	5,475,563	1.36	5.6%
Mesirow Financial Private Equity Partnership Fund V, L.P.	2009	45,000,000	38,947,655	34,882,954	37,924,748	1.87	16.2%
Platinum Equity Capital Partners III, L.P.	2012	15,000,000	14,094,835	19,176,093	5,491,924	1.75	36.9%
Warburg Pincus Private Equity XI, L.P.	2012	25,000,000	25,421,162	16,023,131	23,810,082	1.57	13.8%
Apollo Investment Fund VIII, L.P.	2013	20,000,000	18,031,323	5,281,776	16,997,595	1.24	10.2%
Carlyle Partners VI, L.P.	2013	20,000,000	20,694,942	8,200,895	18,328,008	1.28	11.3%
Landmark Equity Partners XV, L.P.	2013	19,000,000	12,940,155	8,897,262	7,953,286	1.30	14.4%
Landmark Equity Partners XV, L.P. - Side Car	2013	6,000,000	4,877,080	2,998,671	4,147,564	1.47	18.0%
CVC Capital Partners VI, L.P.	2014	17,482,580	17,182,164	4,563,459	17,817,242	1.30	14.3%
Crestview Partners III, L.P.	2013	15,000,000	9,028,125	1,624,870	9,933,125	1.28	14.0%
Crestview Partners III (Co-Investment B), L.P.	2013	5,000,000	4,582,635	250,760	4,917,883	1.13	6.8%
ASF VI, L.P.	2014	15,000,000	10,556,327	5,258,242	9,510,833	1.40	13.3%
ASF VI NYC Co-Invest, L.P.	2014	5,000,000	3,832,844	2,929,604	2,349,084	1.38	12.8%
Carlyle Partners VI, L.P. - Side Car	2014	2,200,000	1,568,038	91,883	1,337,325	0.91	-3.2%
Lexington Capital Partners VIII, L.P.	2014	20,000,000	13,781,550	5,224,865	13,624,554	1.37	24.0%
Vista Equity Partners Fund V, L.P.	2014	25,000,000	28,725,878	22,494,927	27,501,007	1.74	22.7%
Centerbridge Capital Partners III, L.P.	2015	2,500,000	1,405,477	467,111	1,268,076	1.23	11.0%
Siris Partners III, L.P.	2015	3,500,000	2,939,689	1,599,722	1,819,161	1.16	9.6%
<i>NYCBERS - 2012 Emerging Manager Program</i>	<i>2012</i>	<i>14,650,000</i>	<i>13,688,342</i>	<i>2,125,178</i>	<i>14,735,694</i>	<i>1.23</i>	<i>9.4%</i>
American Securities Partners VII, L.P.	2015	8,000,000	5,171,566	1,013,767	3,498,492	0.87	-9.4%
ASF VII, L.P.	2015	10,000,000	3,393,990	360,476	3,947,409	1.27	18.6%
ASF VII B NYC Co-Invest, L.P.	2015	6,000,000	2,909,857	239,840	4,399,007	1.59	51.2%
<i>NYCBERS - 2015 Emerging Manager Program</i>	<i>2015</i>	<i>40,350,000</i>	<i>9,852,344</i>	<i>323,469</i>	<i>10,782,482</i>	<i>1.13</i>	<i>30.9%</i>
Warburg Pincus Private Equity XII, L.P.	2015	21,500,000	15,211,416	795,837	16,974,734	1.17	12.0%
Welsh, Carson, Anderson & Stowe XII, L.P.	2015	10,000,000	6,823,327	1,392,304	9,116,126	1.54	26.8%
Bridgepoint Europe V, L.P.	2015	8,589,271	7,780,008	1,061,965	8,822,675	1.27	18.4%
Bridgepoint Europe V Co-Invest	2015	2,914,680	2,702,670	270,187	4,037,183	1.59	39.9%
EQT VII, L.P.	2015	17,095,351	13,989,707	1,344,195	16,589,726	1.28	17.3%

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

Alternative Assets Manager Performance Detail

Through December 31, 2018



	Vintage Year (Cash Flow)	Commitments	Contributions	Distributions	Market Value	Investment Multiple	ITD IRR%
Vista Equity Partners Fund VI, L.P.	2016	16,000,000	14,890,364	4,078,656	14,767,799	1.27	16.8%
Apax IX USD, L.P.	2016	13,000,000	5,756,158	123,294	6,788,860	1.20	16.3%
Ares Corporate Opportunities Fund V, L.P.	2017	10,000,000	4,227,808	172,155	3,982,983	0.98	-2.0%
Green Equity Investors VII, L.P.	2017	10,000,000	4,596,760	39,598	4,935,446	1.08	8.0%
BC European Capital X, L.P.	2017	11,506,957	5,676,912	-	5,353,598	0.94	-10.2%
BC European Capital X Metro Co-Investment L.P.	2017	4,636,440	2,714,591	-	2,649,032	0.98	-3.1%
Platinum Equity Capital Partners IV, L.P.	2016	11,500,000	7,414,006	1,963,321	7,736,095	1.31	36.1%
CVC Capital Partners VII, L.P.	2018	19,441,108	3,048,070	-	3,269,446	1.07	N/M
Apollo Investment Fund IX, L.P.	2018	32,000,000	-	-	(336,725)	N/A	N/A
KKR Americas Fund XII, L.P.	2017	16,000,000	5,510,069	105,478	5,248,550	0.97	-6.0%
Warburg Pincus Financial Sector, L.P.	2017	13,000,000	3,419,000	676,605	2,318,419	0.88	-23.6%
EQT VIII SCSP	2018	13,161,660	115,578	-	(45,363)	(0.39)	N/M
Siris Partners IV, L.P.	2018	10,000,000	-	-	(63,495)	N/A	N/A
Bridgepoint Europe VI, L.P.	2018	14,306,152	-	-	(124,671)	N/A	N/A
Bridgepoint Europe VI Co-Invest	2018	3,576,538	-	-	-	N/A	N/A
EQT VIII SCSP (Co-Invest)	2018	4,780,661	712,512	-	716,852	1.01	N/M
Platinum Equity Small Cap Fund, L.P.	2018	10,000,000	487,743	-	350,239	0.72	N/M
Platinum Equity Capital Partners IV, L.P. (Co-Invest)	2018	1,500,000	1,050,000	-	616,536	0.59	N/M
Crestview Partners IV (FF), L.P.	2018	2,666,667	-	-	-	N/A	N/A
Crestview Partners IV, L.P.	2018	8,000,000	-	-	-	N/A	N/A
WCAS XIII, L.P.	2019	10,000,000	-	-	-	N/A	N/A
Palladium Equity Partners V, L.P.	2019	10,000,000	-	-	(370,042)	N/A	N/A
KKR European Fund V, L.P. - USD	2019	9,950,000	-	-	-	N/A	N/A
Lexington Capital Partners IX, L.P.	2019	12,375,000	-	-	-	N/A	N/A
Vista Equity Partners Fund VII, L.P.	2018	20,500,000	-	-	(17,021)	N/A	N/A

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

Alternative Assets Manager Performance Detail

Through December 31, 2018



	Vintage Year	Style Sector	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
TOTAL PRIVATE REAL ESTATE			515,472,264	380,152,860	194,926,529	340,728,801	1.41	11.9%
TOTAL PRIVATE REAL ESTATE								
LaSalle Property Fund	2010	Core Portfolio	38,600,000	27,600,000	9,333,476	39,012,970	1.75	10.5%
UBS Trumbull Property Fund	2011	Core Portfolio	41,400,000	62,585,575	42,232,493	60,059,935	1.63	8.9%
NYC Asset Investor #2	2013	Core Portfolio	11,000,000	10,697,057	2,990,746	14,362,381	1.62	14.9%
MetLife Core Property Fund	2014	Core Portfolio	15,000,000	15,000,000	2,683,266	18,652,995	1.42	9.7%
USAA Eagle Real Estate Fund	2015	Core Portfolio	18,000,000	13,480,059	863,030	14,959,096	1.17	8.8%
Artemis Co-Investment	2016	Core Portfolio	11,000,000	10,728,426	3,941,790	8,971,516	1.20	21.9%
Brookfield Premier Real Estate Partners	2016	Core Portfolio	10,000,000	10,682,893	682,893	12,412,888	1.23	12.0%
Exeter Core Industrial Club Fund II	2016	Core Portfolio	10,000,000	5,895,000	732,118	6,515,464	1.23	14.3%
Jamestown Premier Property Fund	2016	Core Portfolio	6,246,307	5,878,706	2,529,863	4,551,548	1.20	9.8%
Lion Industrial Trust	2017	Core Portfolio	18,000,000	12,817,797	817,796	15,175,738	1.25	15.0%
Almanac Realty Securities VIII	2018	Core Portfolio	10,500,000	26,415	-	(18,478)	N/A	N/A
Almanac Realty Securities VIII (Sidecar II)	2018	Core Portfolio	7,000,000	20,483	-	19,599	N/A	N/A
Artemis Income and Growth Fund	2018	Core Portfolio	10,000,000	-	-	-	N/A	N/A
Heitman Core Real Estate Debt Income Trust	2018	Core Portfolio	10,000,000	3,604,733	-	3,641,001	N/A	N/A
Franklin Templeton Private Real Estate Fund	2011	Non-Core Portfolio	30,000,000	35,765,101	43,085,728	7,180,999	1.41	20.9%
Brookfield Strategic Real Estate Partners	2012	Non-Core Portfolio	10,000,000	11,746,644	14,864,371	8,119,094	1.96	22.0%
Blackstone Real Estate Partners Europe IV L.P. - USD	2013	Non-Core Portfolio	32,500,000	32,060,079	30,022,474	17,982,578	1.50	16.0%
NYC Asset Investor #1	2013	Non-Core Portfolio	10,000,000	11,184,152	4,586,113	9,439,408	1.25	6.8%
NYC Asset Investor #3	2013	Non-Core Portfolio	8,000,000	5,033,253	881,994	5,484,634	1.26	9.2%
Carlyle Realty Partners VII, L.P.	2014	Non-Core Portfolio	25,000,000	20,905,935	12,850,165	15,428,651	1.35	15.2%
H/2 Special Opportunities Fund III	2014	Non-Core Portfolio	15,000,000	15,000,000	9,263,875	9,765,772	1.27	11.4%
Blackstone Real Estate Partners VIII L.P.	2015	Non-Core Portfolio	16,500,000	13,760,406	4,579,844	12,960,282	1.27	16.7%
Tristan European Property Investors Special Opp IV	2015	Non-Core Portfolio	11,360,920	7,928,004	491,719	8,522,646	1.11	10.6%
DivcoWest Fund V	2016	Non-Core Portfolio	10,000,000	4,836,791	7,180	5,042,130	1.04	4.1%
Exeter Industrial Value Fund IV, L.P.	2016	Non-Core Portfolio	10,000,000	5,500,000	-	5,933,857	1.08	12.3%
H/2 Special Opportunities Fund IV	2016	Non-Core Portfolio	10,000,000	1,480,197	81,350	1,329,946	0.95	-3.3%
Pramerica Real Estate Capital VI	2016	Non-Core Portfolio	10,477,739	5,229,505	2,329,213	3,669,863	1.18	16.8%
PW Real Estate Fund III	2016	Non-Core Portfolio	11,417,837	6,550,789	840,210	8,068,316	1.27	26.6%
Westbrook Real Estate Fund X Co-Investment	2016	Non-Core Portfolio	10,000,000	5,089,895	1,144,230	4,569,354	1.12	11.6%
DRA Growth and Income Fund IX	2017	Non-Core Portfolio	10,000,000	5,477,137	1,499,687	5,003,405	1.19	20.4%
Lone Star Real Estate Fund V	2017	Non-Core Portfolio	23,164,910	3,300,129	1,017,634	1,881,414	0.88	-14.4%
NYCRS-KKR CMBS Retention Partners	2017	Non-Core Portfolio	13,000,000	7,751,886	446,326	9,488,878	1.28	29.7%
Aermont Capital Real Estate Fund IV	2018	Non-Core Portfolio	10,304,550	-	-	-	N/A	N/A
Brookfield Strategic Real Estate Partners III, L.P.	2018	Non-Core Portfolio	12,000,000	-	-	-	N/A	N/A
KKR Real Estate Partners Americas II	2018	Non-Core Portfolio	10,000,000	2,535,813	126,943	2,540,921	N/A	N/A

Information provided by the New York City Retirement Systems Consultants. Interim returns are subject to change and may differ due to differences in accounting and performance methodologies.

Alternative Assets Manager Performance Detail

Through December 31, 2018



	Vintage Year	Original Commitment	Total Contributions	Total Distributions	Market Value	Total Value Multiple	Net IRR%
TOTAL INFRASTRUCTURE		190,787,015	96,361,521	20,848,481	97,647,176	1.23	13.5%
TOTAL INFRASTRUCTURE							
Brookfield Infrastructure Fund II, L.P.	2013	10,000,000	8,167,953	2,068,928	9,812,771	1.45	12.5%
IFM Global Infrastructure Fund	2014	15,000,000	20,027,335	7,327,940	20,528,793	1.39	12.3%
Global Energy & Power Infrastructure Fund II	2014	15,000,000	12,678,770	7,241,011	10,415,215	1.39	37.3%
KKR Global Infrastructure Investors II L.P.	2014	19,000,000	18,448,066	2,019,211	19,425,110	1.16	9.9%
Global Infrastructure Partners III-A/B, L.P.	2016	12,000,000	8,546,855	190,474	8,415,822	1.01	0.6%
Brookfield Infrastructure Fund III, L.P.	2016	10,000,000	4,189,468	292,770	4,308,997	1.10	8.4%
Actis Energy 4	2016	10,600,000	5,535,314	816,395	5,532,000	1.15	18.6%
EQT Infrastructure III (No.2) SCSp	2017	9,293,524	5,785,385	385,390	6,526,433	NM	NM
ASF VII Infrastructure L.P.	2017	12,000,000	1,326,620	413,278	1,188,119	NM	NM
Axiom Infrastructure North America	2017	12,113,491	7,439,756	54,599	7,438,394	NM	NM
NYCRS EIG Energy Partners, L.P.	2017	11,760,000	1,255,100	38,485	1,269,722	NM	NM
NYCRS EIG Energy Partners Co-Investment, L.P.	2018	2,940,000	-	-	-	NM	NM
KKR Global Infrastructure Investors III L.P.	2018	15,600,000	1,080,898	-	946,683	NM	NM
Global Energy & Power Infrastructure Fund III, L.P.	2018	15,600,000	-	-	-	NM	NM
Cardinal NR Sidecar Holdings L.P.	2018	1,880,000	1,880,000	-	1,839,118	NM	NM
EQT Infrastructure IV (No.2) USD SCSp	2019	18,000,000	-	-	-	NM	NM

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 11 - 16 - Portfolio Asset Allocation

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

Pages 17 - 19 - 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.

Glossary of Terms

Through March 31, 2019



The indexes and most recent policy weights are as follows:

*U.S. Equity: Russell 3000 * 33.39%*

*International Developed (EAFE) Markets: MSCI World ex USA IMI Net * 12.06%*

*International Active – Global Equity: MSCI ACWI * 1.65%*

*Emerging Markets: MSCI Emerging Markets * 6.80%*

*International Emerging Managers FOF: MSCI ACWI Ex US IMI Net * 0.95%*

*Private Equity: Russell 3000 + 300 b.p. per annum * 6.81%*

*Private Real Estate – Core: NFI - ODCE Net * 3.42%*

*Private Real Estate – Non Core: NFI - ODCE Net + 200bps * 2.43%*

*Infrastructure: CPI + 4% * 1.83%*

*US Treasury Short Term: FTSE USBIG Treasury 1-3Y * 0.00%*

*Total Active Government: NYC Treasury Agency + 5 * 9.42%*

*Core Fixed Income: BBG Barc Agg * 0.00%*

*Progress Fixed: BBG Barc Agg * 0.00%*

*Mortgage: FTSE Mortgage Index * 3.77%*

*ETI: ETI Custom Benchmark * 0.58%*

*Investment Grade Credit: NYC – Investment Grade Credit * 4.35%*

*High Yield: Bloomberg Barclays US High Yield 2% Issuer Capped * 6.00%*

*Bank Loans: Credit Suisse Leveraged Loan * 2.00%*

*TIPS: BBG BARC Gbl Inf-Lk: US TIPS (Dly) * 4.54%*

Page 20 – 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.