



New York City
Fire Department Pension Fund, Subchapter Two
Performance Overview as of March 31, 2019

Total Fund Overview

New York City Fire Department Pension Fund, Subchapter Two

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Broad Market Commentary

Volatility roared back into US equity markets in the first quarter, snapping an 18-month benign streak. Stoked by fears of rising Treasury yields and a tumultuous unwinding in the short-equity volatility trade, the S&P 500's run of 15 straight months in the black ended in February. Markets fared no better in March amid an escalation in trade tensions between the United States and China. The prospect of disruption in economic trade between the world's two largest economies rattled markets globally, sending stocks lower and pushing credit spreads higher.

The tit-for-tat tariffs levied by the US and China underscore our concerns around the backlash against globalization—one of our key market themes for 2018—as decades of unevenly distributed economic gains and loss of manufacturing jobs fuel a rise in populism. Politically, this fatigue with globalization is broadly expressed as a desire to shy away from multilateral relations and to turn inward as a nation, as demonstrated by the Brexit vote in 2016. We view this as a long-term trend as the underlying drivers—unequal wealth distribution and a shrinking middle class in the developed world—are unlikely to reverse course in the foreseeable future. We believe the result is a persistent anti-establishment political bias, as a disenfranchised electorate in Europe and the US challenge political norms and economic conventions. To this end, the tensions surrounding the trade relations between the United States and China strike at the heart of the global economy's free trade orthodoxy. US trade with China totals nearly \$650 billion and the combined value of trade amongst its main trading partners—China, Canada and Mexico—is nearly \$2 trillion. With these trade balances playing a prominent role in the global economy, US trade policy has been a major area of focus within our globalization backlash theme. While we maintain our belief that a shift to an aggressive US protectionist trade policy is a lower probability tail-risk, a sharp decline in trade with the US's main trading partners would significantly disrupt global economic activity.

Viewing the ongoing US-China trade dispute through a basic game theory lens, our expectation is that an all-out, no-holds-barred trade war is a low-probability event. If we assume the two nations act in their self-interest, then each side is heavily incentivized to avoid a full-blown trade war as the outcome is adverse for both. The two countries' leaders and their advisors are also keenly aware that a trade war would radically destabilize the global economy and equity markets. So, on the table are three basic strategies:

- (a) China chooses to not respond to the tariffs levied by the US, which is an unlikely outcome.
- (b) China and the US reach a negotiated settlement, which is possible but requires a mutual win for both nations. The challenge will be to find a narrow agreement that offers economic gains to the US and China but doesn't compromise their longer-term strategic interests. At the same time, both leaders would need to highlight successes to claim victory on the issue to their audience back home.
- (c) Let the current game of tariff tit-for-tat play on with the US and China matching the response of the opposing player's most recent move; their self-interest in avoiding a global trade war ensures a calibrated response to not let the situation get out of hand. In our view, this is the likely outcome for US-China trade

Through March 31, 2019



relations, paving the way for greater volatility but not materially altering the equilibrium in the capital markets and the global economy.

To this end, our slate of current opportunities remains largely unchanged. Global growth conditions are on the upswing supported by easy financial conditions and an improved corporate earnings outlook. We believe equities outside the US are best positioned to benefit from this combination and encourage investors to maintain an overweight to emerging market stocks and increase exposure to small-cap equities in the developed world, specifically Japan and Europe. Looking to the US, while the current economic expansion can continue to support domestic stocks, valuations and profit margins are hovering around cyclical highs; as a result, we recommend trimming gains from US equities. Similarly, we suggest reducing credit exposure as we feel current spread levels for return-seeking fixed income, such as high-yield debt and dollar-based emerging market bonds, are not adequately compensating investors. Furthermore, we encourage the addition of safe-haven fixed-income exposure, for instance, Treasury Inflation-Protected Securities (TIPS) and Treasuries, to mitigate potential market drawdowns and maintain a diversified risk-balanced portfolio against the backdrop of US-China trade tensions and higher volatility in equities.

Equity Markets

Volatility dulled returns in the first quarter amid heightening concerns around trade tensions between the United States and China. Developed market stocks outside of North America declined 1.5%, according to the MSCI EAFE Index, while emerging market equities eked out gains of 1.4%. The currency-hedged MSCI EAFE Index lost 4.3% during the quarter as most currencies strengthened against the dollar. US stocks fell 3.7% in February, snapping their 15-month winning streak; they ended the quarter in the red, losing a modest 0.8%. Information technology dominated sector performance, posting strong returns globally.

Within private equity, the fundraising run rate in North America fell in the first quarter from a year ago; in contrast, fund raising in Europe touched a record high. Driven by larger deals, global buyout volume also scaled a new peak for the three months ended March 31, up nearly 90% over the first quarter of 2017; buyout exits continued to decline, modestly down from the same period a year ago.

Equity hedge funds initially rallied, led by fundamental- and market-neutral strategies, but market volatility eroded returns with the HFRI Equity Index ending the quarter at 2.3%. Within sectors, technology outperformed, returning 4.8%. Within special situations strategies, large-cap special-situations trades sold off with the HFRI ED: Special Situations Index nearly flat for the three months ended March 31.

Through March 31, 2019



Fixed Income Markets

Credit was mostly subdued in the first quarter with the Bloomberg Barclays Aggregate down 1.5% and the Bloomberg Barclays High Yield Index losing 0.9%; breaking from the pack, the S&P LSTA Leveraged Loan Index was up 1.4%. US long credit was down 3.8%, while long Treasuries fell 3.3% with yields on the 10-year note at 2.74%.

Outside the US, emerging markets continued to rally with local debt leading the way. The JPM GBI-EM Index returned 4.4% in the first quarter, bolstered by emerging market currencies which were up 2.5%. Hard-currency sovereign debt didn't fare as well, falling 2.0% as spreads widened.

Within hedge funds, long/short credit strategies suffered losses in March with the HFRI Credit Index ending the quarter at 1.9%. Relative-value arbitrage, convertible, global-credit and yield-alternative approaches also pared gains for the quarter in March. Mortgage-backed securities outperformed other asset-backed investments for the quarter due to their lower sensitivity to traditional credit risk.

Real Assets

Commodities declined 0.4% in the first quarter, according to the Bloomberg Commodity Index. Agriculture and energy were in the black while industrial metals lagged. We remain positive on natural resources equities; we also recommend midstream energy equities (MLPs) with security selection being key.

Within private real assets, we favor energy-focused private equity and credit opportunities. The recent strength in the underlying commodities has stabilized prices but transaction volumes are sharply down. Opportunities exist as publicly-traded companies or those aiming to go public struggle to tap capital markets, especially to issue equity. We are also constructive on the mining sector over the mid-to longer-term.

Within real estate, fundamentals remain healthy in the US core property market, but the pace of value appreciation is moderating amid rising interest rates and slowing growth in net operating income. A disconnect between asset values, underscored by publicly traded REITs and private transactions, appears to be widening as most REITs are changing hands at double-digit discounts to their net asset values; if this dynamic persists, public markets may be more attractive for core US real estate. For non-core US real estate, relative-value opportunities remain more appealing. We favor demographically-driven property sectors and managers that are attentive to duration risk in the later innings of the expansion cycle.

Performance (net of fees)

Through March 31, 2019



For the first quarter, the Fund returned 7.43%, outperforming the policy index return by 26 basis points. Over the trailing 3-year period, the Fund returned 9.21% versus the index return of 8.78%, outperforming the index by 43 basis points.

Equity Composite (net of fees)

At the end of the quarter, the Fund held \$9.0 billion (64.91%) in equity securities. The total equity (including PE and RE) composite returned 9.52% for the quarter.

For the quarter, the portfolio held \$4.1 billion (29.53% of the total fund) in domestic equity assets. The Total Domestic Equity Portfolio returned 14.03%, lagging the Russell 3000 Index return of 14.04% by 1 basis points. The domestic equity portfolio is lagging its index by 17 basis points for the 3 year period. Much of the under performance can be attributed to under performance in 2014 and 2015. For the quarter, the best performing portfolio within the domestic equity composite was the mid cap portfolio. The mid cap portfolio bested its index by 340 basis points. For the same period, the worst performing portfolio was the large cap portfolio, which lagged its index by 37 basis points.

For the quarter, the portfolio held \$1.17 billion (8.43% of the total fund) in developed equity assets. The Total Developed Equity Portfolio returned 11.95%, besting its index, which returned of 10.52%, by 143 basis points. For the quarter, the best performing portfolio within the international equity composite was the large/mid (active) portfolio, which bested its index by 202 basis points. Alternatively, the worst performing active composite was the emerging market portfolio which lagged its index by 51 basis points for the quarter.

During the quarter, the portfolio held \$206 million (1.48% of the total fund) in global equities. The global equity composite bested its index, which returned 12.18%, by 518 basis points for the quarter.

Fixed Income Composite (net of fees)

At the end of the quarter, the Fund held \$4.87 billion (35.08% of the total fund) in fixed income securities. The Total Fixed Income portfolio returned 3.88% for the quarter. For the 3 year period, the portfolio has posted a return of 3.91%. For the quarter, the worst performing composite was the convertible debt portfolio, which lagged its index by 375 basis points. The core portfolio was the strongest outperforming composite. For the quarter the portfolio outpaced its index by 80 basis points.

Real Estate and Infrastructure Composites

For the quarter, the Fund had \$183 million (1.32% of the total fund) in Real Estate Equity Securities ("REIT"). For the quarter, the REIT portfolio returned 16.43% (net of fees), outperforming its index by 71 basis points.

Through March 31, 2019



For the quarter, the Fund had \$578 million (4.16% of the total fund) in private real estate investments. For the quarter, the real estate portfolio returned 1.29% (time weighted), lagging NCREIF NFI-ODCE Net +100 basis points index, by 15 basis points.

For the quarter, the Fund had \$118 million (0.85% of the total fund) in private infrastructure investments. For the first quarter, the infrastructure portfolio returned 1.93% (time weighted), outperforming CPI +4% index, by 38 basis points.

Private Equity Composites (time weighted)

The Fund held \$920 million (6.62% of the total fund) in private equity investments. For the quarter, the private equity portfolio returned -0.38%, outperforming its index by 1,325 basis points.

NYC's Total HF Allocations (Direct + Permal holdings):

The allocation to hedge funds as of March 31, 2019 was \$729.7 million, 5.3% of the total fund. The first quarter return for the hedge fund portfolio was 2.2%, underperforming the HFRI FOF Composite Index +1% return of 4.9%, and outperforming the 1 Yr. T-bill yield + 4% return of 2.0%.

NYC's Direct HF allocations only:

The allocation to hedge funds as of March 31, 2019 was \$729.0 million, 5.2% of the total fund. The first quarter return for the hedge fund portfolio was 2.2%, underperforming the HFRI FOF Composite Index +1% return of 4.9%, and outperforming the 1 Yr. T-bill yield + 4% return of 2.0%.

NYC's Tactical Portfolio:

The allocation to the tactical trade as of March 31, 2019 was \$82.3 million, 0.59% of the total fund. The first quarter return for the tactical trade was -0.7%, underperforming the Russell 3000 return of 14.0%.

Note: 1Yr. T-bill + 4% calculated using Barclays U.S. Treasury: 1-3 Year + 4%

Total Portfolio Returns: March 31, 2019

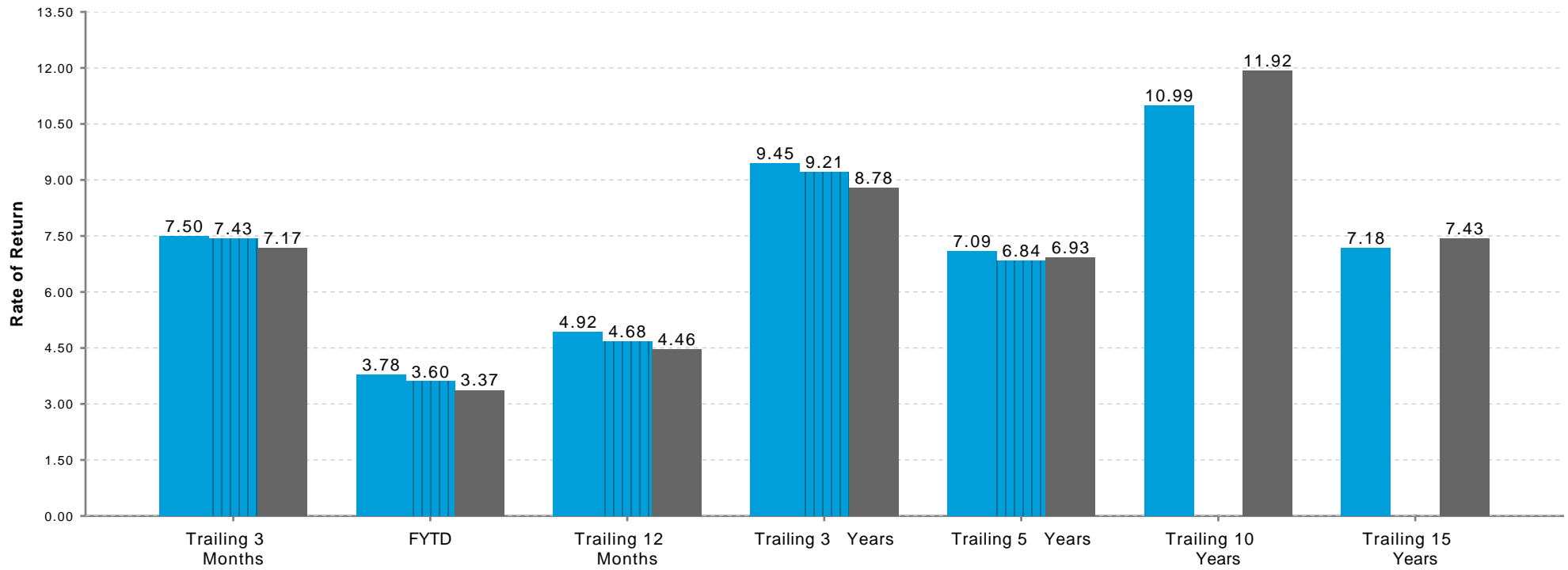


Market Value (Billions)

TOTAL FIRE

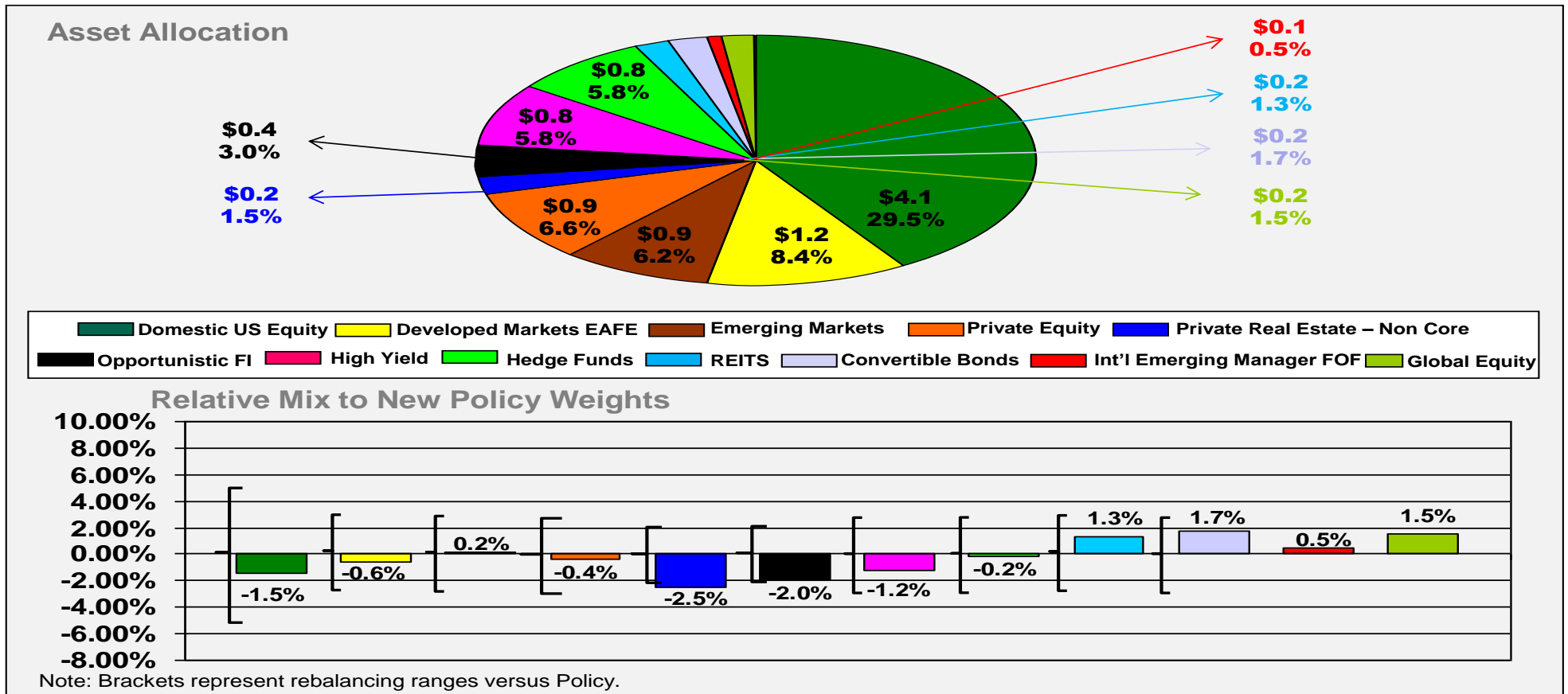
\$13.9

■ Total Fire - Gross ■ Total Fire - Net Mgr ■ Fire Policy Benchmark

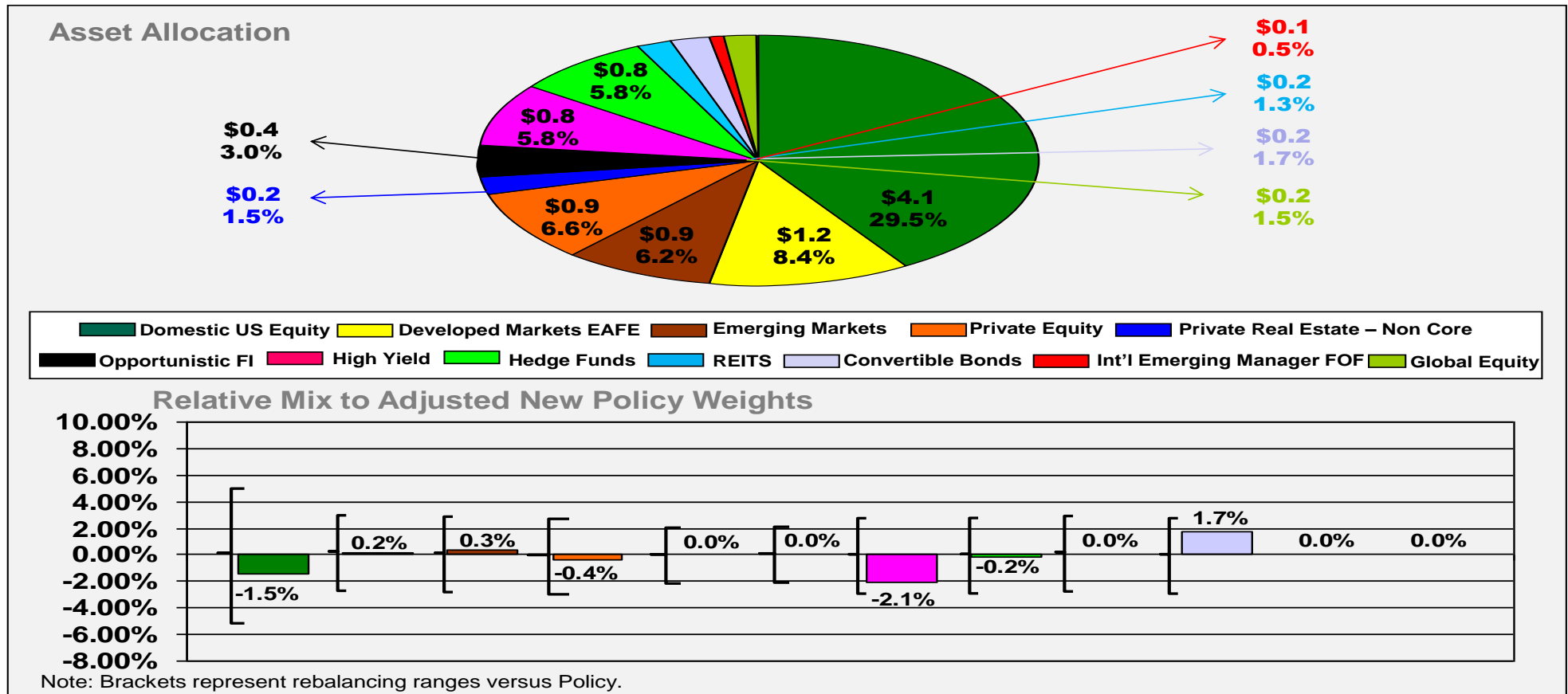


	Plan 3 Years	Benchmark 3 Years	Plan 5 Years	Benchmark 5 Years	Plan 10 Years	Benchmark 10 Years
Standard Deviation						
TOTAL FIRE	5.3	5.5	7.1	5.9	7.9	8.8

Portfolio Asset Allocation – Growth

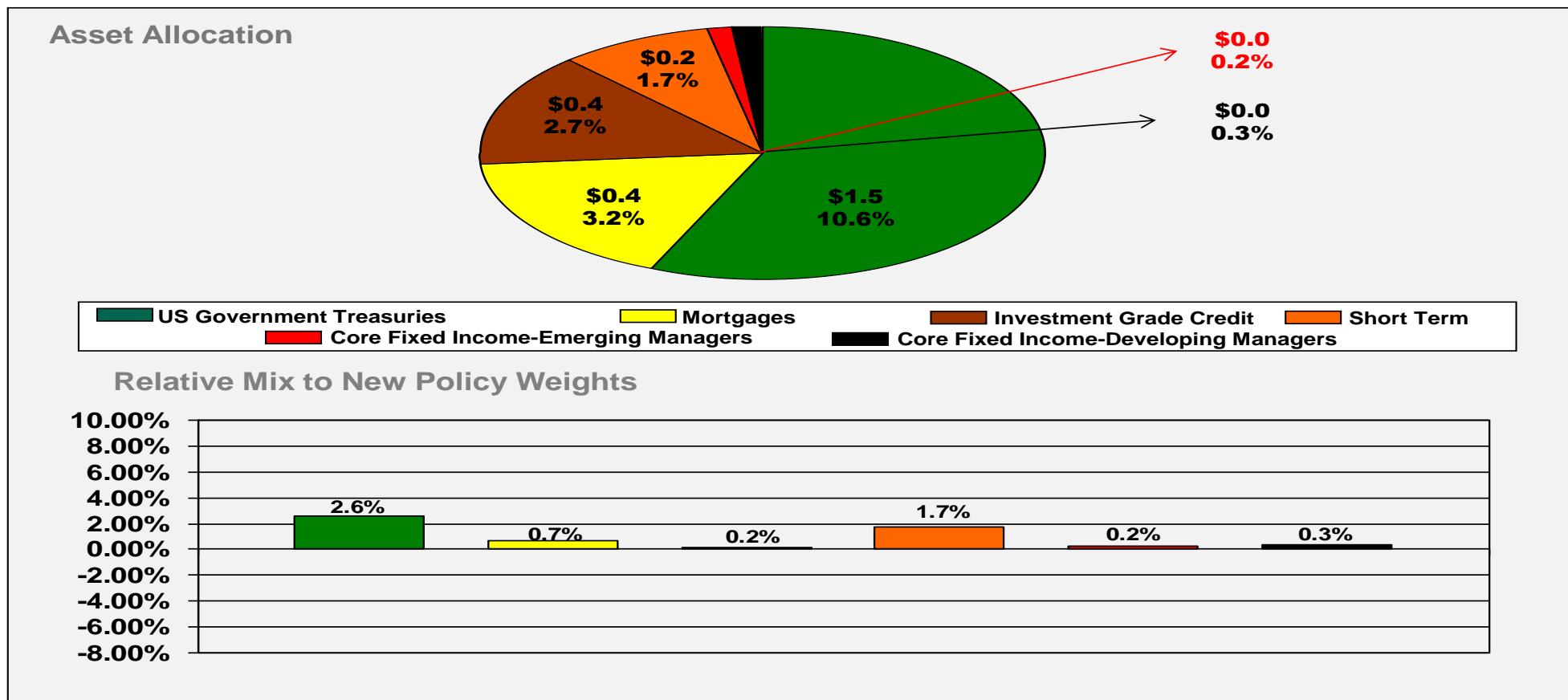


Portfolio Asset Allocation – Growth

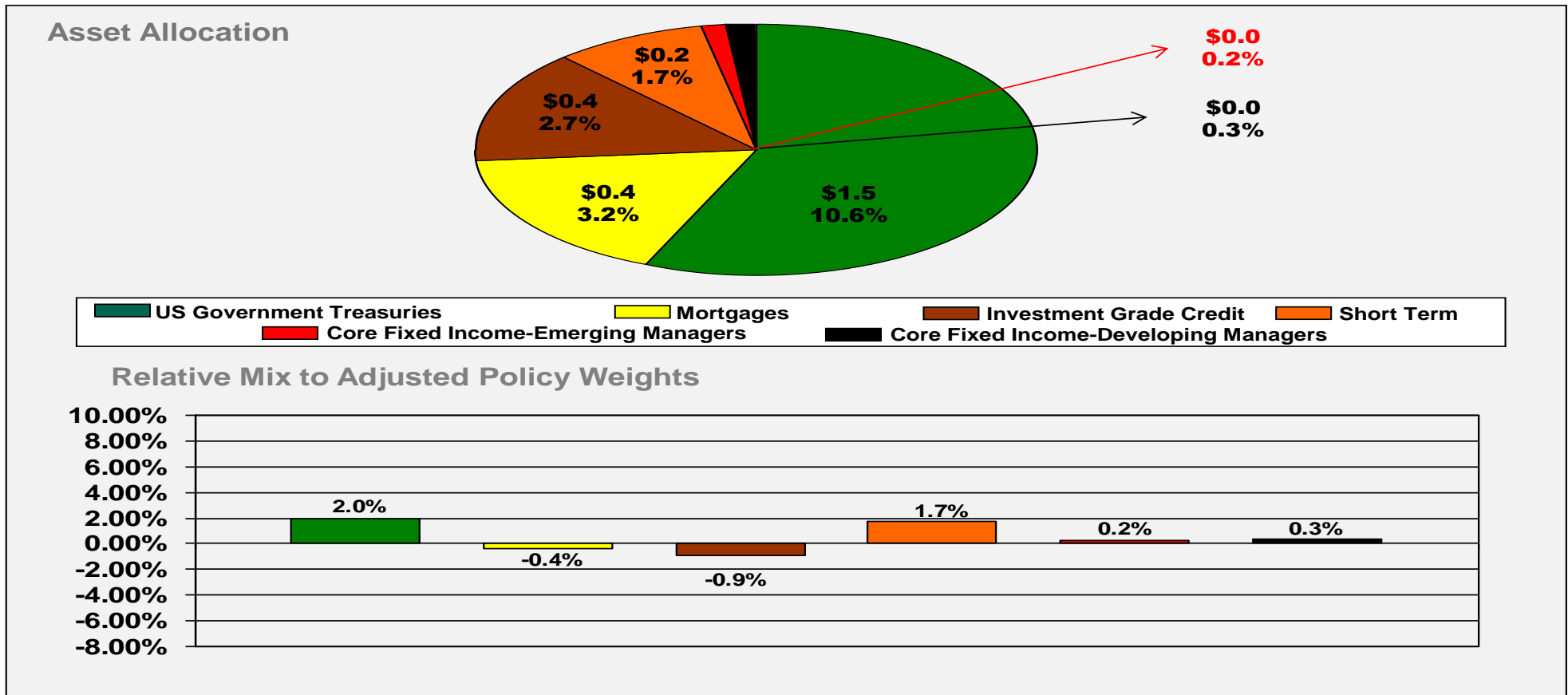


Note: On March 29, 2019 Fire's combined Fixed Income and Cash portfolios have a duration of 7.1 years. The duration of the Barclays US Aggregate Index was 5.8 years on that date.

Portfolio Asset Allocation – Deflation Protection

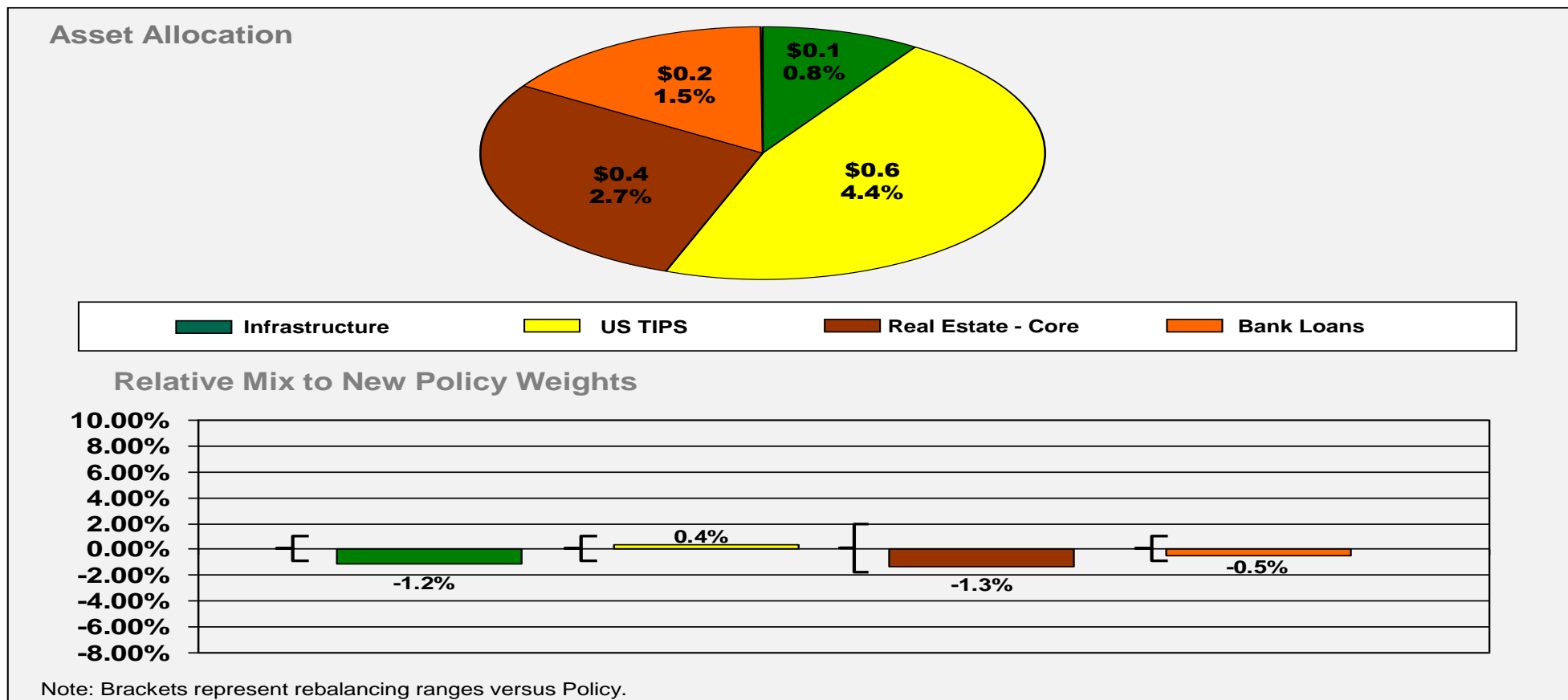


Portfolio Asset Allocation – Deflation Protection

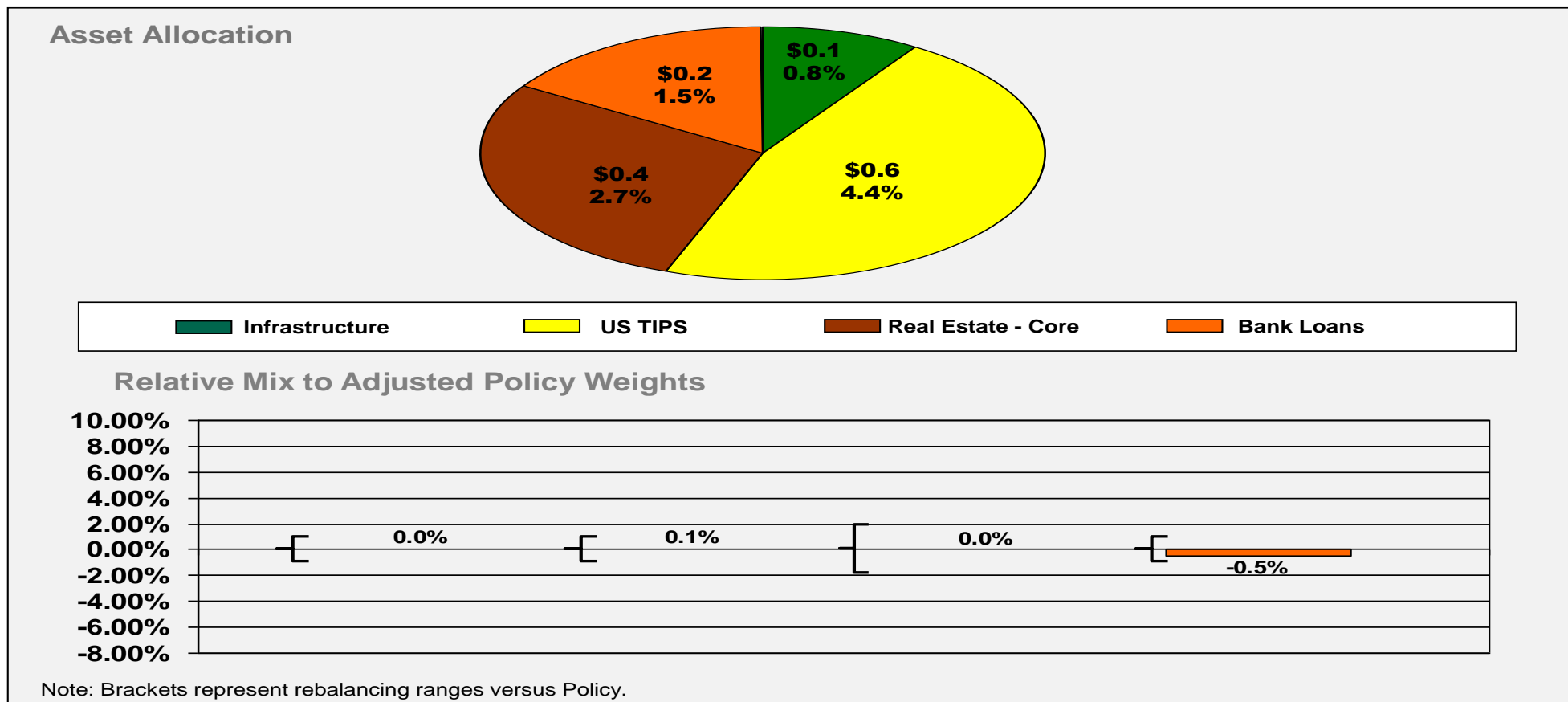


Note: On March 29, 2019 Fire's combined Fixed Income and Cash portfolios have a duration of 7.1 years. The duration of the Barclays US Aggregate Index was 5.8 years on that date.

Portfolio Asset Allocation – Inflation Protection

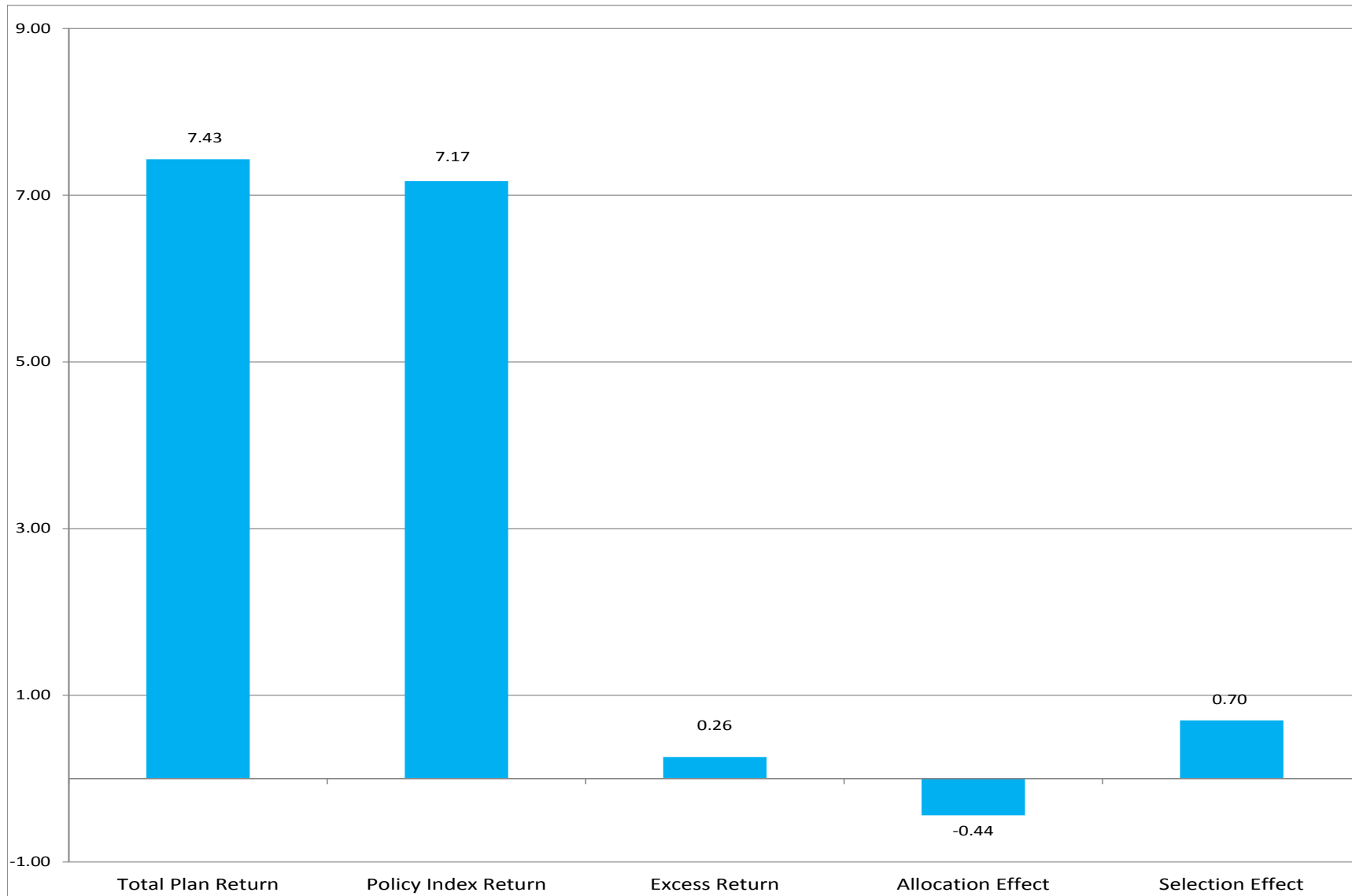


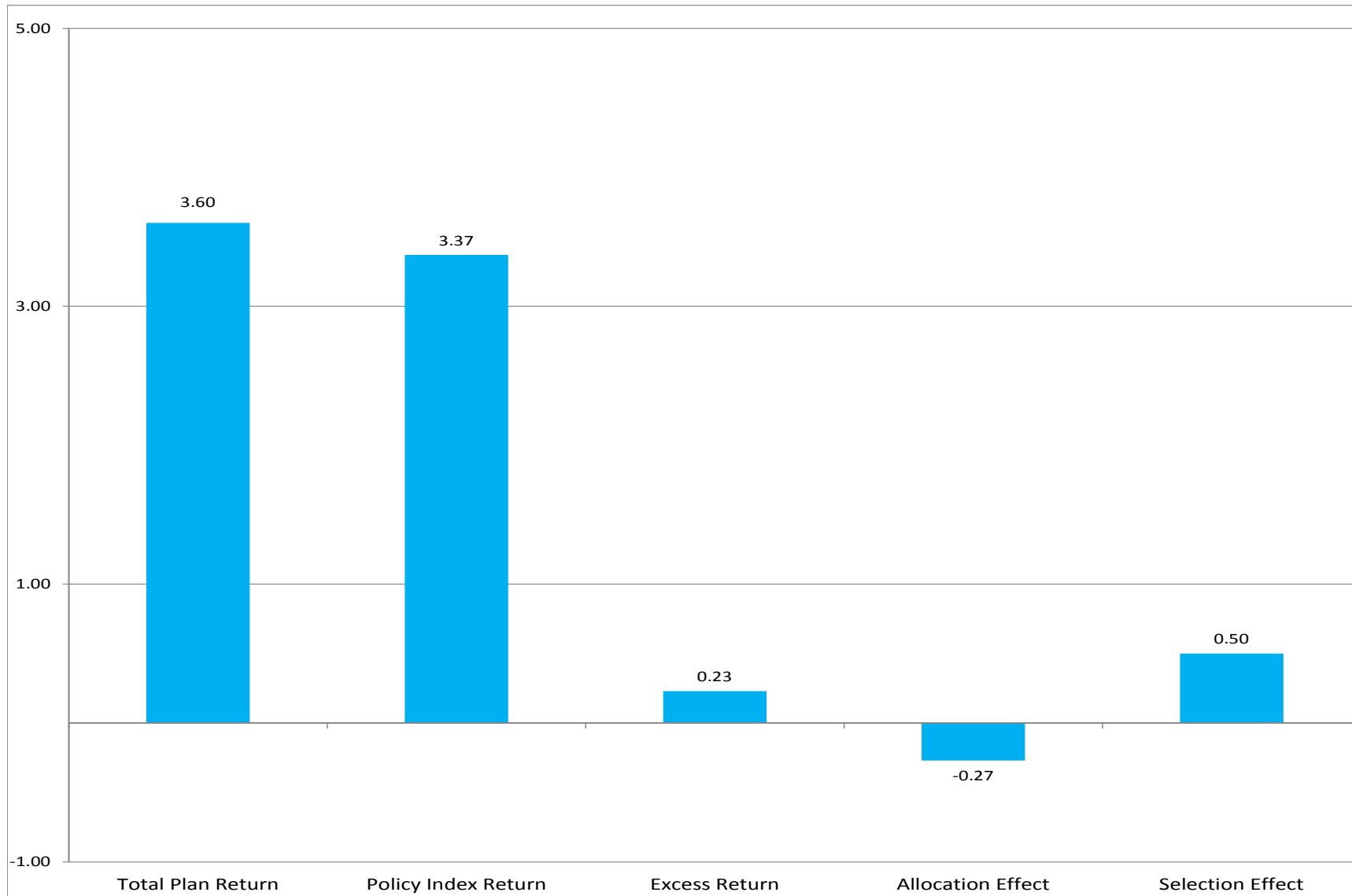
Portfolio Asset Allocation – Inflation Protection



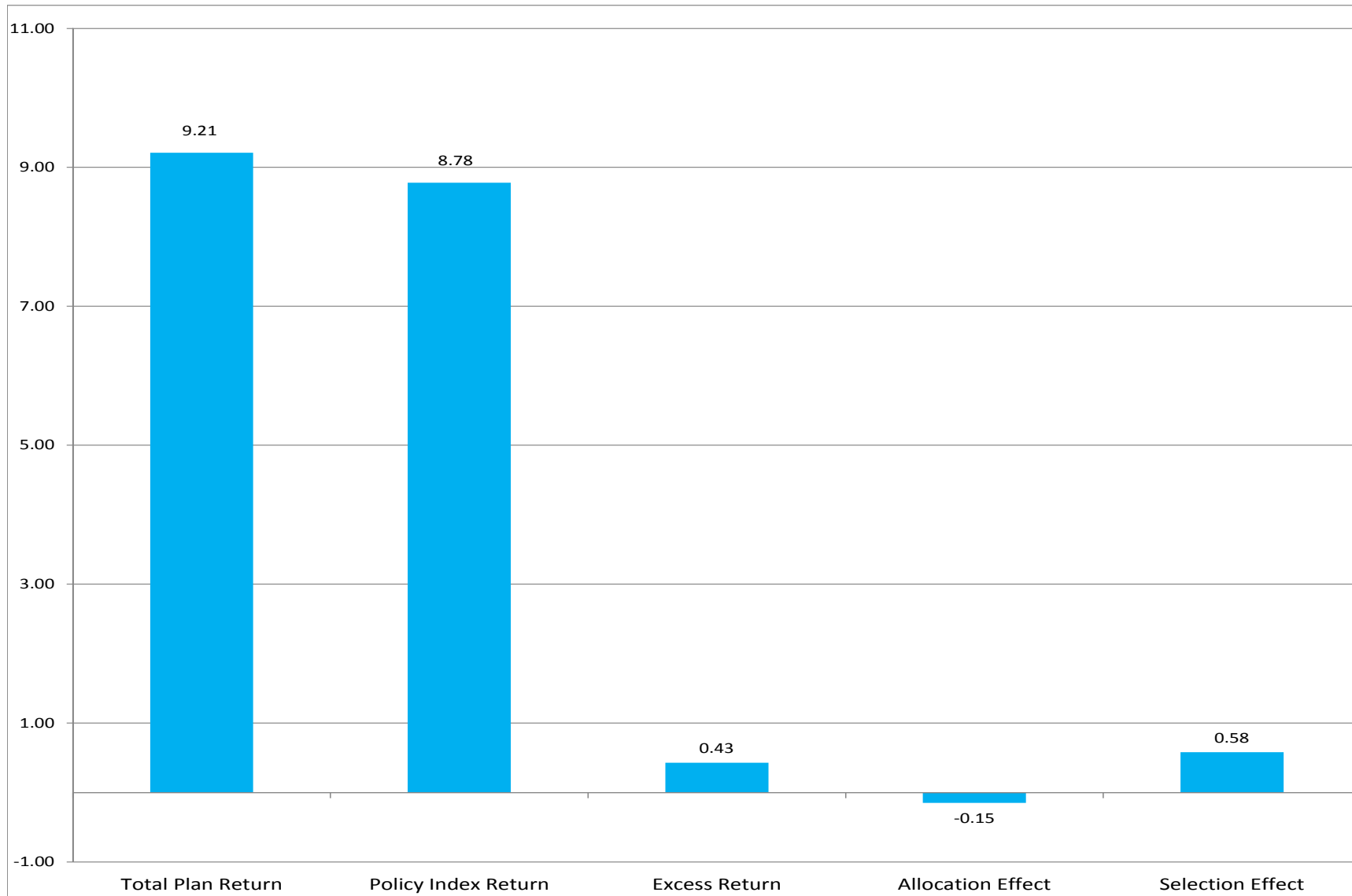
Note: On March 29, 2019 Fire's combined Fixed Income and Cash portfolios have a duration of 7.1 years. The duration of the Barclays US Aggregate Index was 5.8 years on that date.

Performance Attribution: Total Plan - Quarter Ending: March 31, 2019





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





Allocation Effect - Asset Class Breakdown				
	Quarter	FYTD	3 Years	Benchmark
TOTAL FIRE	-0.44	-0.27	-0.15	Fire Policy Benchmark
TOTAL DOMESTIC EQUITY	-0.25	-0.09	-0.07	RUSSELL 3000
TOTAL DEVELOPED EQUITY	-0.02	-0.02	0.00	MSCI World Ex USA IMI Net
TOTAL EMERGING MARKETS	0.00	-0.04	-0.01	MSCI Emerging Markets
TOTAL GLOBAL EQUITY	0.00	-0.02	0.00	MSCI AC WORLD
TOTAL INTERNATIONAL FOF	0.00	0.00	0.00	MSCI ACWI Ex US IMI Net
TOTAL HEDGE FUNDS	0.00	0.00	0.00	HFRI Fund of Funds Composite Index plus 1%
TOTAL REAL ESTATE SECURITIES	0.10	0.07	-0.05	Dow Jones US Select Securities Index
TOTAL PRIVATE EQUITY	-0.02	-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	-0.33	0.10	-0.04	FTSE USBIG Treasury 1-3 Y Index
TOTAL US TREASURY INTERMEDIATE	0.00	0.00	-0.02	FTSE USBIG Treasury/Agency 1-10 y
TOTAL ACTIVE GOVERNMENT	-0.03	0.08	-0.14	NYC - Treasury Agency Plus Five
TOTAL US TREASURY LONG DURATION	0.10	-0.18	0.21	FTSE Treasury 10+
TOTAL INVESTMENT GRADE CREDIT	0.00	-0.02	-0.09	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.01	-0.01	0.03	FTSE MORTGAGE INDEX
TOTAL ETI	0.00	0.00	0.00	ETI Custom Benchmark
TOTAL CORE FI- DEVELOPING MGRS	-0.01	0.00	-0.02	BBG BARC Agg
TOTAL CORE FI- EMERGING MGRS	-0.01	0.00	-0.01	BBG BARC Agg
TOTAL HIGH YIELD	0.00	-0.06	0.09	High Yield Custom Benchmark
TOTAL BANK LOANS	0.01	0.00	0.01	Credit Suisse Lev Loan Index
TOTAL TIPS MANAGERS	-0.01	-0.01	-0.01	BBG BARC Gbl Inf-Lk: US TIPS (Dly)
TOTAL CONVERTIBLE BONDS	0.05	0.01	0.02	Merrill All US Converts
TOTAL OPPORTUNISTIC FIXED	0.00	0.00	0.00	OFI - JPMGHY / CSFB 50/50 Blend Plus 300
TOTAL CASH	-0.05	-0.02	-0.11	

Selection Effect - Asset Class Breakdown				
	Quarter	FYTD	3 Years	Benchmark
TOTAL FIRE	0.70	0.50	0.58	Fire Policy Benchmark
TOTAL DOMESTIC EQUITY	0.00	-0.13	-0.05	RUSSELL 3000
TOTAL DEVELOPED EQUITY	0.11	0.01	0.24	MSCI World Ex USA IMI Net
TOTAL EMERGING MARKETS	-0.02	0.02	0.05	MSCI Emerging Markets
TOTAL GLOBAL EQUITY	0.07	0.03	0.01	MSCI AC WORLD
TOTAL INTERNATIONAL FOF	0.00	-0.01	0.00	MSCI ACWI Ex US IMI Net
TOTAL HEDGE FUNDS	-0.19	0.01	0.04	HFRI Fund of Funds Composite Index plus 1%
TOTAL REAL ESTATE SECURITIES	0.01	0.00	0.01	Dow Jones US Select Securities Index
TOTAL PRIVATE EQUITY	0.95	0.65	0.18	Russell 3K + 300bps
TOTAL PRIVATE REAL ESTATE-CORE	0.00	0.03	0.02	NCREIF ODCE net
TOTAL PRIVATE REAL ESTATE-NON CORE	-0.01	-0.01	0.03	NCREIF ODCE net + 200bps
TOTAL INFRASTRUCTURE	0.00	0.03	0.03	CPI + 4%
TOTAL US TREASURY SHORT TERM	0.00	0.00	0.00	FTSE USBIG Treasury 1-3 Y Index
TOTAL US TREASURY INTERMEDIATE	0.00	0.00	0.00	FTSE USBIG Treasury/Agency 1-10 y
TOTAL ACTIVE GOVERNMENT	0.00	0.00	0.00	NYC - Treasury Agency Plus Five
TOTAL US TREASURY LONG DURATION	0.00	0.00	0.00	FTSE Treasury 10+
TOTAL INVESTMENT GRADE CREDIT	0.01	0.00	0.02	NYC - Investment Grade Credit
TOTAL MORTGAGES	0.00	0.00	0.00	FTSE MORTGAGE INDEX
TOTAL ETI	0.00	0.00	0.00	ETI Custom Benchmark
TOTAL CORE FI- DEVELOPING MGRS	0.00	0.00	0.00	BBG BARC Agg
TOTAL CORE FI- EMERGING MGRS	0.00	0.00	0.00	BBG BARC Agg
TOTAL HIGH YIELD	-0.02	-0.04	-0.02	High Yield Custom Benchmark
TOTAL BANK LOANS	-0.01	-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 CONVERTIBLE BONDS	-0.06	-0.02	-0.07	Merrill All US Converts
TOTAL OPPORTUNISTIC FIXED	-0.15	-0.07	0.02	OFI - JPMGHY / CSFB 50/50 Blend Plus 300
TOTAL CASH	0.00	0.00	0.00	

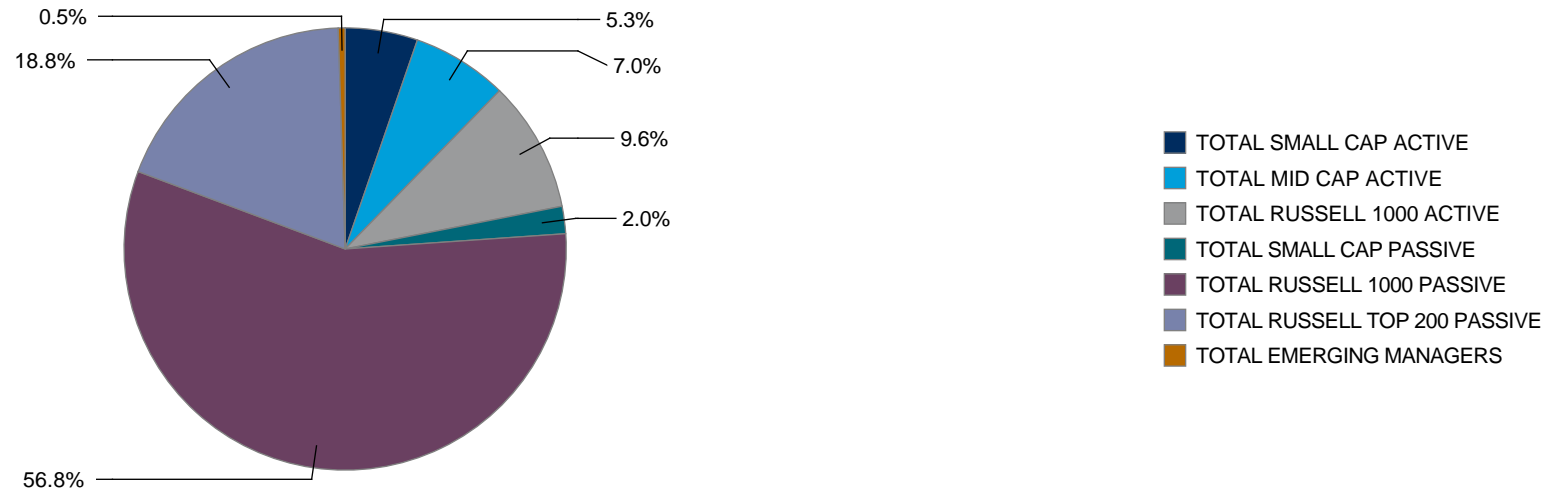
Total Domestic Equity Asset Allocations: March 31, 2019



Market Value (Billions)

TOTAL DOMESTIC EQUITY

\$4.1

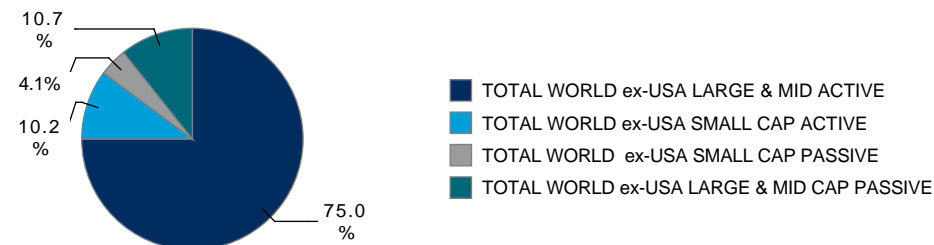
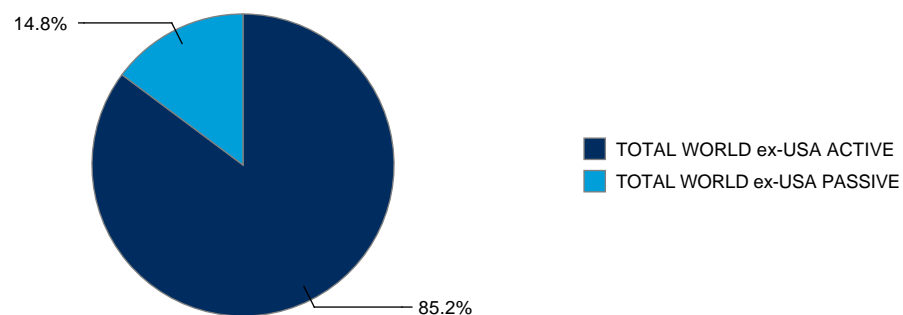


	Policy Weight	Actual Weight	Under/Over Weight	Quarterly Returns		
				Fund	Benchmark	Excess
TOTAL SMALL CAP ACTIVE	4.9	5.3	0.4	14.2	14.6	(0.4)
TOTAL MID CAP ACTIVE	7.0	7.0	(0.0)	19.9	16.5	3.4
TOTAL RUSSELL 1000 ACTIVE	18.0	9.6	(8.4)	11.7	14.0	(2.3)
TOTAL SMALL CAP PASSIVE	2.2	2.0	(0.1)	16.9	14.6	2.3
TOTAL RUSSELL 1000 PASSIVE	49.8	56.8	7.1	14.0	14.0	(0.0)
TOTAL RUSSELL TOP 200 PASSIVE	17.6	18.8	1.2	13.0	13.1	(0.0)
TOTAL EMERGING MANAGERS	0.6	0.5	(0.1)	14.3	14.6	(0.3)

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



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL WORLD ex-USA	\$1.2	8.4

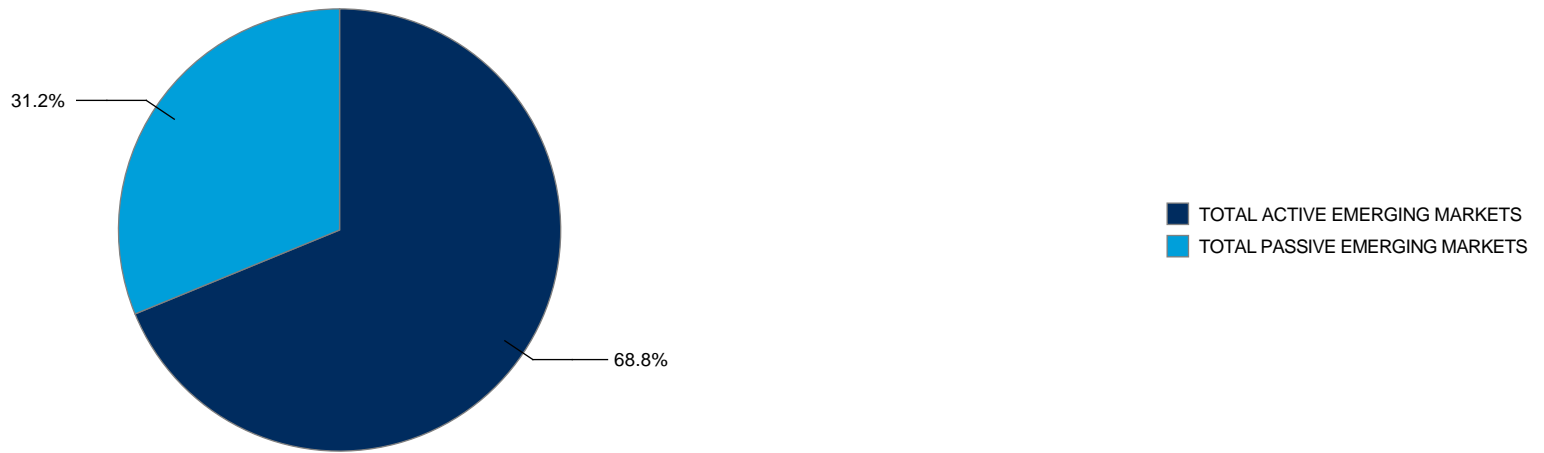


	<u>Asset Class Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL WORLD ex-USA LARGE & MID ACTIVE	74.96	12.46	10.45	2.02
TOTAL WORLD ex-SMALL CAP ACTIVE	10.24	9.93	9.92	0.01
TOTAL WORLD ex-USA SMALL CAP PASSIVE	4.13	10.79	10.93	(0.14)
TOTAL WORLD ex-USA LARGE & MID CAP PASSIVE	10.67	10.46	10.45	0.01
TOTAL WORLD ex-USA	100.00	11.95	10.52	1.43

Emerging Markets Equity Asset Allocation: March 31, 2019



	<u>Market Value (Millions)</u>	<u>% of Plan</u>
TOTAL EMERGING MARKETS	\$857.7	6.2

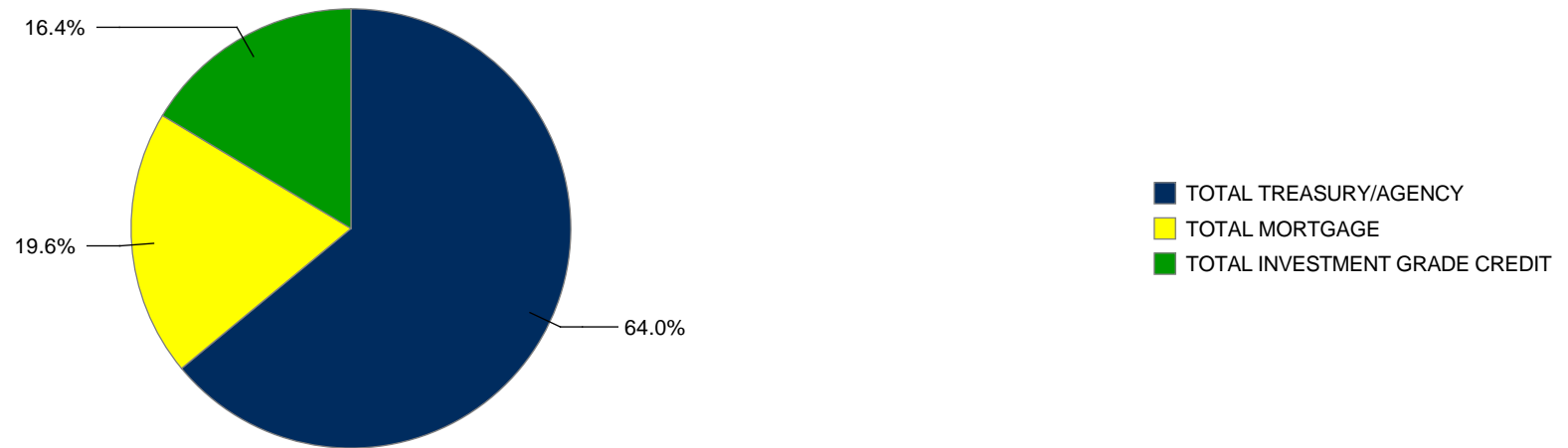


	<u>Asset Class Weight</u>	<u>Quarterly Returns</u>		
		<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL ACTIVE EMERGING MARKETS	68.77	9.40	9.92	(0.51)
TOTAL PASSIVE EMERGING MARKETS	31.23	10.04	9.92	0.13
TOTAL EMERGING MARKETS	100.00	9.60	9.92	(0.31)

Structured Fixed Income Asset Allocation: March 31, 2019



	<u>Market Value (Billions)</u>	<u>% of Plan</u>
TOTAL STRUCTURED+ETI	\$2.3	16.5

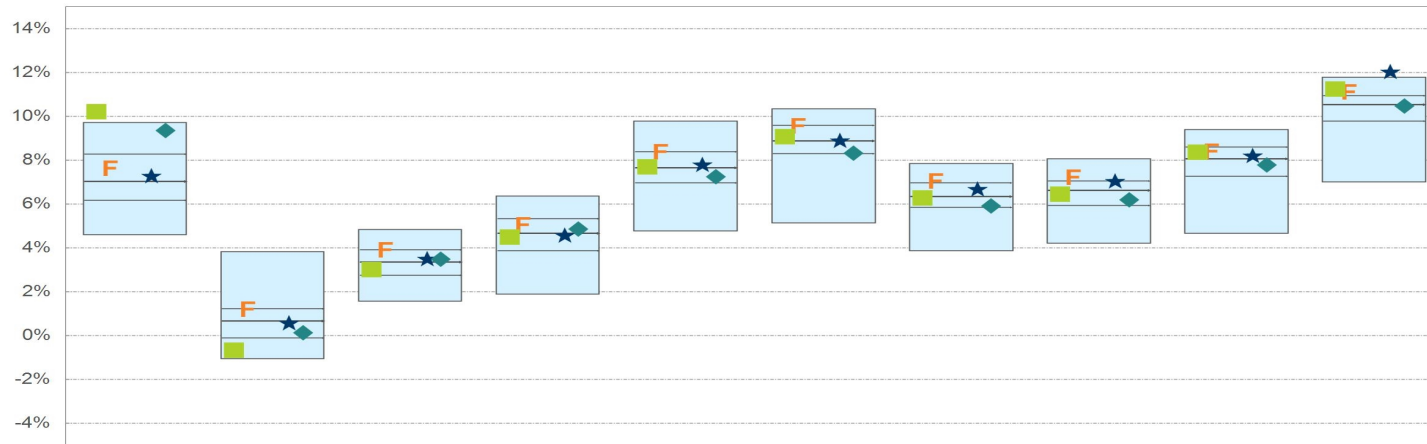


	<u>Policy Weight</u>	<u>Actual Weight</u>	<u>Under/Over Weight</u>	<u>Quarterly Returns</u>		
				<u>Fund</u>	<u>Benchmark</u>	<u>Excess</u>
TOTAL TREASURY/AGENCY	61.54	64.01	2.47	3.34	4.70	(1.36)
TOTAL MORTGAGE	19.23	19.59	0.36	2.39	2.16	0.23
TOTAL INVESTMENT GRADE CREDIT	19.23	16.40	(2.83)	4.99	4.72	0.27



City of New York Performance Comparison

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

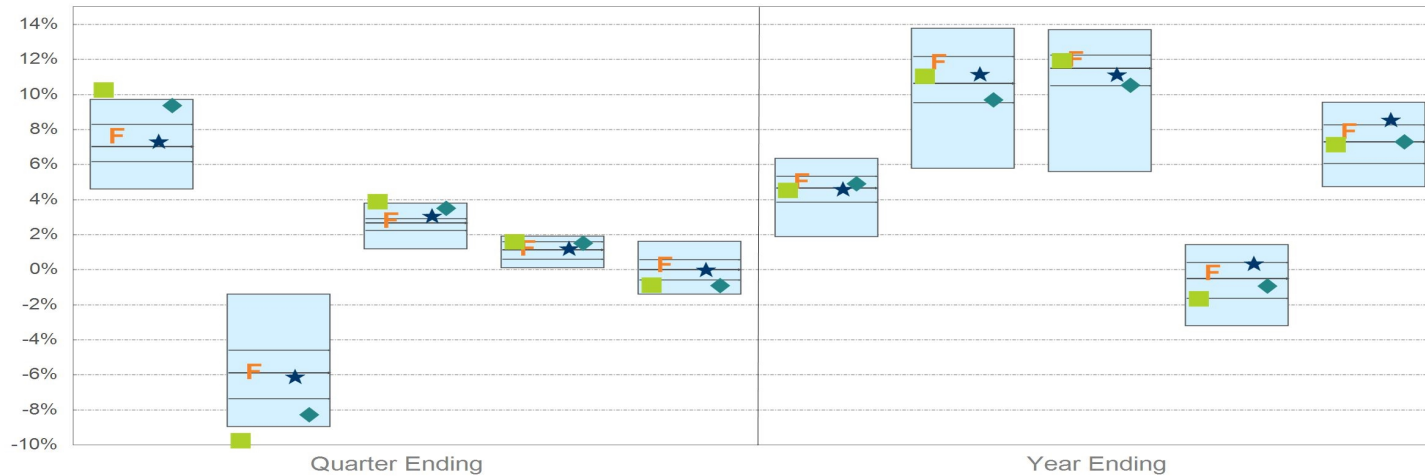


Percentile Rankings	1 Qtr	2 Qtrs	3 Qtrs	1 Year	2 Years	3 Years	4 Years	5 Years	7 Years	10 Years
5th	9.72	3.83	4.84	6.37	9.78	10.36	7.86	8.07	9.40	11.79
25th	8.29	1.23	3.91	5.34	8.38	9.60	6.96	7.05	8.61	10.96
50th	7.04	0.67	3.35	4.67	7.66	8.88	6.35	6.62	8.06	10.55
75th	6.17	-0.11	2.75	3.86	6.97	8.31	5.86	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
F Total System - Fire	7.50 (39)	1.08 (26)	3.78 (28)	4.92 (35)	8.26 (26)	9.45 (26)	6.92 (29)	7.09 (21)	8.28 (34)	10.99 (21)
★ Fire Policy Benchmark	7.17 (46)	0.45 (57)	3.37 (48)	4.46 (57)	7.68 (43)	8.78 (54)	6.57 (40)	6.93 (35)	8.09 (45)	11.92 (4)
■ 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)



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
F Total System - Fire	7.50 (39)	-5.97 (50)	2.67 (50)	1.09 (54)	0.14 (40)	4.92 (35)	11.71 (32)	11.87 (37)	-0.31 (48)	7.77 (39)
★ Fire Policy Benchmark	7.17 (46)	-6.27 (59)	2.91 (28)	1.05 (56)	-0.14 (59)	4.46 (57)	11.01 (40)	11.00 (62)	0.20 (32)	8.40 (19)
■ 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)

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

INVESTMENT STYLE (EQUITIES)	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Actual 2018			Total Fees & Expenses in (\$M)		Avg. MV FYTD 09-30-18 (\$MM)	Estimates 2019	
				Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS	Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS		Mgmt. Fees (\$M)	Mgmt. Fees in BPS
Total US Equities	6,512.85	3,011.61		4.62	479.58	-	3,491.20	5.36	3,993.90	3,491.65	8.74
Small Cap Active											
Small Cap Growth	206.48	1,388.08		67.22	-	-	1,388.08	67.22	234.66	1,610.35	68.63
Small Cap Value	59.25	589.31		99.47	-	-	589.31	99.47	73.22	731.88	99.96
	147.24	798.78		54.25	-	-	798.78	54.25	161.44	878.48	54.42
Mid Cap Active											
Mid Cap Growth	276.52	1,148.77		41.54	479.58	17.34	1,628.36	58.89	293.74	1,212.25	41.27
Mid Cap Value	-	-		-	-	-	-	-	-	-	-
Mid Cap Core	127.07	702.72		55.30	-	-	702.72	55.30	126.00	706.18	56.05
	149.45	446.05		29.85	479.58	32.09	925.64	61.94	167.75	506.07	30.17
Russell 1000 Fundamental	191.28	221.68			-	-	221.68	11.59	407.24	468.71	11.51
Active Emerging Managers (U.S. Equities)	21.10	98.29		46.59	-	-	98.29	46.59	22.29	111.25	49.90
Total US Active Equities	695.38	2,856.82		41.08	479.58	6.90	3,336.41	47.98	957.93	3,402.56	35.52
Small Cap Passive											
Small Cap Passive	37.94	1.58		0.42	-	-	1.58	0.42	90.21	3.82	0.42
Russell / S&P Passive											
Russell 1000 Growth Passive	799.71	36.56		0.46	-	-	36.56	0.46	1.16	-	-
Russell 1000 Value Passive	730.57	33.22		0.45	-	-	33.22	0.45	1.14	-	-
Russell 1000 Core Passive	2,609.38	13.72		0.05	-	-	13.72	0.05	2,171.30	43.41	0.20
Passive Russell 3000	924.46	60.13		0.65	-	-	60.13	0.65	0.00	-	-
Passive S&P 500	-	-		-	-	-	-	-	-	-	-
Passive Russell Top 200	715.41	9.58		0.13	-	-	9.58	0.13	772.15	41.86	0.54
Total US Passive Equities	5,817.47	154.79		0.27	-	-	154.79	0.27	3,035.97	89.09	0.29

FIRE 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	2,122.25	6,109.77		28.79	-	-	6,109.77	28.79	2,076.27	5,808.85	27.98
Global Equity	100.11	65.03			-	-	65.03	6.50	200.55	900.89	44.92
Total Global Equities	100.11	65.03			-	-	65.03	6.50	200.55	900.89	44.92
Active EAFE Equities	1,085.77	3,345.37		30.81	-	-	3,345.37	30.81	1,038.19	3,124.13	30.09
World Ex-USA Large & Mid Active	922.60	2,582.09		27.99	-	-	2,582.09	27.99	907.40	2,523.52	27.81
World Ex-USA Small Cap Active	163.10	763.29		46.80	-	-	763.29	46.80	130.78	600.61	45.92
Total World Ex USA	0.07	-		-	-	-	-	-	0.01	-	-
Active Emerging Markets	570.72	2,367.23		41.48	-	-	2,367.23	41.48	589.70	2,331.09	39.53
Total Active Int'l Fund of Funds	73.80	257.42		34.88	-	-	257.42	34.88	73.24	253.79	34.65
Total Active International Equities	1,730.29	5,970.02		34.50	-	-	5,970.02	34.50	1,701.13	5,709.01	33.56
Int'l Passive Equities											
World Ex-USA Small Cap Passive	36.37	17.76		4.88	-	-	17.76	4.88	36.62	18.34	5.01
World Ex-USA Large & Mid Cap Passive	71.39	8.08		1.13	-	-	8.08	1.13	71.90	8.36	1.16
Passive Emerging Markets	284.20	113.92		4.01	-	-	113.92	4.01	266.62	73.15	2.74
Total Int'l Passive Equities	391.97	139.75		3.57	-	-	139.75	3.57	375.14	99.84	2.66
REITS Active Equities	199.95	778.89		38.95	-	-	778.89	38.95	171.60	714.57	41.64

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

	Actual 2018						Total Fees & Expenses in (\$M)		Avg. MV FYTD 09-30- 18 (\$MM)	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		Mgmt. Fees (\$M)	Mgmt. Fees in BPS
INVESTMENT STYLE (FIXED INCOME)											
Total Fixed Income	4,116.89	5,269.86		12.80	25.20	0.06	5,295.06	12.86	4,551.45	5,060.94	11.12
Structured Program	2,116.17	1,094.72		5.17	25.20	0.12	1,119.92	5.29	2,473.86	876.28	3.54
Government Treas/Agency Sector	718.53	338.55		4.71	25.20	0.35	363.74	5.06	1,266.65	277.59	2.19
Long Duration Treasury	429.39	41.49		0.97			41.49		453.29	45.95	1.01
Mortgage Sector	332.06	163.45		4.92	-	-	163.45	4.92	331.59	164.86	4.97
Investment Grade Credit Sector	636.20	551.24		8.66	-	-	551.24	8.66	422.33	387.88	9.18
Developing Managers	44.02	87.15		19.80	-	-	87.15	19.80	43.80	87.52	19.98
Emerging Managers	30.09	103.08		34.25	-	-	103.08	34.25	30.01	103.79	34.58
TIPS	553.68	98.24		1.77	-	-	98.24	1.77	592.04	106.33	1.80
Active TIPS Managers	140.54	77.80		5.54	-	-	77.80	5.54	150.41	84.03	5.59
Passive TIPS Managers	413.14	20.45		0.49	-	-	20.45	0.49	441.63	22.30	0.50
High Yield	634.27	1,937.20		30.54	-	-	1,937.20	30.54	629.70	1,748.55	27.77
Bank Loans	201.83	729.21		36.13	-	-	729.21	36.13	208.12	741.45	35.63
Convertible Bonds	211.70	951.85		44.96	-	-	951.85	44.96	233.85	1,125.80	48.14
ETI - Access - RBC	25.01	46.40		18.55	-	-	46.40	18.55	26.69	49.23	18.44
ETI - AFL-CIO HIT	54.97	222.00		40.39	-	-	222.00	40.39	54.55	222.00	40.70
Total Public Markets (Externally managed)	12,806.89	15,235.16		11.90	504.78	0.39	15,739.94	12.29	10,734.95	15,976.91	14.88
Other ETI Programs	17.43	-		-	-	-	-	-	17.75	-	-
In-House Short Term	227.74	-		-	-	-	-	-	241.08	-	-
Total Public Markets	13,052.06	15,235.16		11.67	504.78	0.39	15,739.94	12.06	10,993.77	15,976.91	14.53

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

INVESTMENT STYLE (PRIVATE MARKETS)	Avg. MV FY 2018 (\$MM)	Mgmt. Fees (\$M)	Partnership Expenses (\$M)	Actual 2018			Total Fees & Expenses in (\$M)	Total Fees & Expenses in BPS	Avg. MV FYTD 09-30-18 (\$MM)	Estimates 2019	
				Mgmt. Fees / Partnership Expenses in BPS	Incentive Fees in (\$M)	Incentive Fees in BPS				Mgmt. Fees (\$M)	Mgmt. Fees in BPS
Hedge Funds	664.49	7,425.47	-	111.75	9,656.24	145.32	17,081.71	257.06	729.78	7,945.26	108.87
Private Equity	892.21	10,552.74	3,741.62	160.21	21,921.29	245.70	36,215.64	405.91	921.27	15,683.38	170.24
Private Real Estate	541.74	5,425.91	1,773.88	132.90	7,360.98	135.88	14,560.77	268.78	555.21	5,839.47	105.18
Infrastructure	58.31	1,669.19	690.75	131.47	115.07	19.73	2,475.01	125.35	82.40	2,315.38	117.26
Opportunistic Fixed Income	372.36	3,388.53	2,587.11	160.48	1,098.09	29.49	7,073.73	189.97	391.00	3,416.67	87.38
Total Private Markets	2,529.11	28,461.84	8,793.36	147.31	40,151.66	158.76	77,406.86	306.06	2,679.66	35,200.15	131.36
Total Overall	13,126.35	43,697.00	8,793.36	39.99	40,656.44	30.97	93,146.81	70.96	13,673.44	51,177.06	37.43

The overall carried interest and incentive fees paid by FIRE in Fiscal Year 2018: 30.97 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.

**NYC FIRE DEPARTMENT PENSION FUND
SECURITIES LENDING INCOME
March 31, 2019**

	U. S. FIXED INCOME	U. S. EQUITY	INTERNATIONAL EQUITY	TOTAL
1989	109,000	-	-	109,000
1990	104,000	-	-	104,000
1991	157,000	-	-	157,000
1992	429,000	47,000	48,000	524,000
1993	762,000	146,000	102,000	1,010,000
1994	693,000	267,000	102,000	1,062,000
1995	495,000	306,000	96,000	897,000
1996	455,000	228,000	179,000	862,000
1997	473,000	512,000	257,000	1,242,000
1998	789,000	552,000	356,000	1,697,000
1999	716,000	690,000	408,000	1,814,000
2000	734,000	897,000	408,000	2,039,000
2001	1,176,000	1,286,000	561,000	3,023,000
2002	671,000	1,162,000	506,000	2,339,000
2003	349,000	644,000	452,000	1,445,000
2004	505,000	670,000	462,000	1,637,000
2005	740,000	1,070,000	574,000	2,384,000
2006	599,000	1,753,000	713,000	3,065,000
2007	1,437,000	3,180,000	786,000	5,403,000
2008	4,172,000	6,798,000	1,236,000	12,206,000
2009	1,606,000	3,588,000	817,000	6,011,000
2010	760,000	2,047,000	563,000	3,370,000
2011	977,000	2,674,000	927,000	4,578,000
2012	1,229,000	3,324,000	832,000	5,385,000
2013	893,000	3,467,000	704,000	5,064,000
2014	756,000	2,028,000	1,739,000	4,523,000
2015	788,000	2,034,000	2,407,000	5,229,000
2016	807,000	3,245,000	2,094,000	6,146,000
2017	1,285,000	2,515,000	1,574,000	5,374,000
2018	1,100,230	2,442,001	1,489,477	5,031,708
2019 (3 months)	155,264	784,892	334,734	1,274,890
Since Inception	<u>25,921,494</u>	<u>48,356,892</u>	<u>20,727,212</u>	<u>95,005,598</u>

**New York City
Fire Department Pension Fund, Subchapter Two**

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	FIRE-TOTAL PORTFOLIO - GROSS	13,887	100.00	7.50	3.78	7.50	(2.27)	16.81	8.68	0.34	7.55	9.45	7.09	10.99	8.53	07/01/1987
	FIRE - ESTIMATED INVESTMENT FEES			(0.07)	(0.18)	(0.07)	(0.19)	(0.26)	(0.25)	(0.25)	(0.29)	(0.24)	(0.25)			
	EST MANAGEMENT FEES - PUBLIC MARKET (ACCRUAL)			(0.03)	(0.09)	(0.03)	(0.11)	(0.12)	(0.13)	(0.15)	(0.16)	(0.12)	(0.13)			
	EST MANAGEMENT FEES - ALTERNATIVE MARKETS (CASH)			(0.04)	(0.09)	(0.04)	(0.08)	(0.14)	(0.10)	(0.13)	(0.12)	(0.12)				
	EST INCENTIVE FEES															
	EST OTHER FEES															
	EST FEE OFFSETS															
	FIRE-TOTAL PORTFOLIO - NET MGR			7.43	3.60	7.43	(2.47)	16.55	8.43	0.09	7.26	9.21	6.84			
	FIRE POLICY BENCHMARK			7.17	3.37	7.17	(2.67)	16.06	8.91	0.43	8.43	8.78	6.93	11.92		
	EXCESS RETURN			0.26	0.23	0.26	0.20	0.49	(0.48)	(0.33)	(1.17)	0.43	(0.09)	(0.93)		
EQUITY RETURN DETAIL																
26	FIRE-TOTAL EQUITY (INCL PE & RA) - GROSS	9,015	64.91	9.61	3.46	9.61	(3.59)	22.64	10.08	0.68	8.36	12.07	8.80	13.66	8.03	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.09)	(0.23)	(0.09)	(0.23)	(0.32)	(0.31)	(0.34)	(0.37)	(0.29)	(0.31)			
	EST MANAGEMENT FEES			(0.09)	(0.23)	(0.09)	(0.23)	(0.32)	(0.31)	(0.34)	(0.37)	(0.29)	(0.31)			
	EST INCENTIVE FEES															
	EST OTHER FEES															
	EST FEE OFFSETS															
	FIRE-TOTAL EQUITY (INCL PE & RA) - NET MGR			9.52	3.23	9.52	(3.82)	22.32	9.77	0.35	7.99	11.78	8.48			
34	FIRE-TOTAL DOMESTIC EQUITY - GROSS	4,100	29.53	14.05	4.31	14.05	(5.45)	20.97	12.97	0.19	11.05	13.42	9.98	15.79	12.20	08/01/1979
	ESTIMATED INVESTMENT FEES			(0.02)	(0.07)	(0.02)	(0.08)	(0.10)	(0.13)	(0.15)	(0.17)	(0.10)	(0.12)			
	FIRE-TOTAL DOMESTIC EQUITY - NET MGR			14.03	4.24	14.03	(5.53)	20.88	12.84	0.04	10.88	13.32	9.85			
	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	11.58	
	EXCESS RETURN			(0.01)	(0.45)	(0.01)	(0.29)	(0.25)	0.10	(0.44)	(1.67)	(0.17)	(0.50)	(0.20)	0.62	
44	FIRE-TOTAL SMALL CAP - GROSS	299	2.15	15.10	(3.03)	15.10	(9.88)	15.49	23.36	(0.80)	4.08	12.95	8.64	15.16	7.45	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.14)	(0.36)	(0.14)	(0.47)	(0.69)	(0.75)	(0.60)	(0.55)	(0.64)	(0.62)			
	FIRE-TOTAL SMALL CAP - NET MGR			14.96	(3.39)	14.96	(10.34)	14.80	22.62	(1.41)	3.52	12.31	8.02			
	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			0.37	1.91	0.37	0.67	0.15	1.31	3.01	(1.37)	(0.61)	0.97	(0.20)	(0.58)	
54	FIRE-TOTAL MID CAP - GROSS	285	2.05	20.06	(0.47)	20.06	(14.39)	24.69	10.84	0.19	9.81	12.21	8.70	16.38	8.56	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.12)	(0.30)	(0.12)	(0.35)	(0.47)	(0.59)	(0.52)	(0.46)	(0.48)	(0.49)			
	FIRE-TOTAL MID CAP - NET MGR			19.94	(0.78)	19.94	(14.74)	24.22	10.25	(0.33)	9.35	11.72	8.21			
	RUSSELL MIDCAP (DAILY)			16.54	3.55	16.54	(9.06)	18.52	13.80	(2.44)	13.22	11.82	8.81	16.88	9.64	
	EXCESS RETURN			3.40	(4.33)	3.40	(5.68)	5.70	(3.55)	2.11	(3.87)	(0.09)	(0.59)	(0.50)	(1.08)	
64	FIRE-TOTAL RUSSELL 1000 - GROSS	2,725	19.62	13.64	5.27	13.64								9.22	04/01/2018	
	ESTIMATED INVESTMENT FEES			(0.01)	(0.02)	(0.01)								(0.02)		
	FIRE-TOTAL RUSSELL 1000 - NET MGR			13.63	5.25	13.63								9.20		
	RUSSELL 1000 (DAILY)			14.00	5.54	14.00								9.30		
	EXCESS RETURN			(0.37)	(0.29)	(0.37)								(0.10)		

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															
76	FIRE-TOTAL RUSSELL TOP 200 PASSIVE - GROSS	771	5.55	13.03	6.35	13.03								9.86	05/01/2018
	ESTIMATED INVESTMENT FEES			0.00	(0.00)	0.00								(0.01)	
	FIRE-TOTAL RUSSELL TOP 200 PASSIVE - NET MGR			13.03	6.35	13.03								9.85	
	RUSSELL TOP 200 INDEX (DAILY)			13.05	6.32	13.05								9.85	
	EXCESS RETURN			(0.02)	0.02	(0.02)								0.00	
86	FIRE-TOTAL FUND OF FUNDS - GROSS	21	0.15	14.47	(1.63)	14.47	(7.75)							6.71	05/01/2017
	ESTIMATED INVESTMENT FEES			(0.14)	(0.37)	(0.14)	(0.46)							(0.62)	
	FIRE-TOTAL FUND OF FUNDS - NET MGR			14.33	(2.00)	14.33	(8.21)							6.09	
	RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)							6.51	
	EXCESS RETURN			(0.26)	3.30	(0.26)	2.80							(0.41)	

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EQUITY RETURN DETAIL																
98	FIRE-TOTAL WORLD ex-USA - GROSS	1,171	8.43	12.02	(2.95)	12.02	(14.17)	31.56	4.14	(1.08)	(5.07)	10.14	4.32	10.33	6.12	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.07)	(0.20)	(0.07)	(0.24)	(0.33)	(0.30)	(0.29)	(0.27)	(0.30)	(0.29)			
	FIRE-TOTAL WORLD ex-USA - NET MGR			11.95	(3.15)	11.95	(14.41)	31.22	3.83	(1.37)	(5.34)	9.85	4.03			
	WORLD EX USA CUSTOM BM			10.52	(3.22)	10.52	(14.68)	26.40	1.15	0.49	(4.90)	7.40	2.67	9.44	5.41	
	EXCESS RETURN			1.43	0.08	1.43	0.28	4.82	2.68	(1.86)	(0.44)	2.45	1.36	0.89	0.71	
108	FIRE-TOTAL WORLD ex-USA LARGE & MID ACTIVE - GROSS	878	6.32	12.54	(1.87)	12.54	(13.36)	32.16	4.51	(3.31)	(4.49)	11.06	4.45		4.61	11/01/2013
	ESTIMATED INVESTMENT FEES			(0.08)	(0.20)	(0.08)	(0.24)	(0.32)	(0.30)	(0.28)	(0.27)	(0.30)	(0.29)		(0.29)	
	FIRE-TOTAL WORLD ex-USA LARGE & MID ACTIVE - NET MGR			12.46	(2.08)	12.46	(13.60)	31.84	4.21	(3.59)	(4.76)	10.76	4.16		4.32	
	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			2.02	0.34	2.02	0.49	6.66	3.21	(2.78)	0.15	3.42	1.79		1.59	
118	FIRE-TOTAL WORLD ex-USA SMALL CAP ACTIVE - GROSS	120	0.86	10.05	(8.60)	10.05	(18.26)	35.60	3.35	10.82	(4.78)	7.84	5.16		7.57	05/01/2013
	ESTIMATED INVESTMENT FEES			(0.11)	(0.31)	(0.11)	(0.39)	(0.65)	(0.50)	(0.54)	(0.47)	(0.51)	(0.51)			
	FIRE-TOTAL WORLD ex-USA SMALL CAP ACTIVE - NET MGR			9.93	(8.91)	9.93	(18.65)	34.95	2.85	10.28	(5.25)	7.33	4.66			
	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			0.01	(0.37)	0.01	(0.07)	1.49	1.51	1.69	(1.82)	0.58	0.54		0.99	
128	FIRE-TOTAL WORLD ex-USA SMALL CAP PASSIVE - GROSS	48	0.35	10.80	(7.74)	10.80	(17.95)	33.51	2.79	9.88		7.82	4.82		5.67	02/01/2014
	ESTIMATED INVESTMENT FEES			(0.01)	(0.02)	(0.01)	(0.02)	(0.08)	(0.02)	(0.02)		(0.04)	(0.03)		(0.03)	
	FIRE-TOTAL WORLD ex-USA SMALL CAP PASSIVE - NET MGR			10.79	(7.76)	10.79	(17.97)	33.43	2.77	9.86		7.78	4.79		5.64	
	WORLD EX USA SC PASSIVE CUSTOM BM			10.93	(7.80)	10.93	(18.07)	33.31	2.18	9.59		7.59	4.53		5.37	
	EXCESS RETURN			(0.14)	0.03	(0.14)	0.10	0.12	0.59	0.27		0.19	0.27		0.28	
138	FIRE-TOTAL WORLD ex-USA LARGE & MID CAP PASSIVE - GROSS	125	0.90	10.46	(1.97)	10.46	(13.63)	24.44	1.30	(0.53)	(4.73)	7.40	2.48		4.41	02/01/2011
	ESTIMATED INVESTMENT FEES			(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.02)	0.00	(0.01)	(0.01)	(0.01)			
	FIRE-TOTAL WORLD ex-USA LARGE & MID CAP PASSIVE - NET MGR			10.46	(1.97)	10.46	(13.64)	24.43	1.28	(0.53)	(4.75)	7.39	2.48			
	NYC CUSTOM WORLD EX US INDEX			10.45	(2.41)	10.45	(14.09)	24.12	1.00	(0.81)	(4.90)	7.04	2.19		4.09	
	EXCESS RETURN			0.01	0.44	0.01	0.45	0.32	0.28	0.29	0.16	0.36	0.28		0.32	

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EQUITY RETURN DETAIL																
150	FIRE-TOTAL ACTIVE EMERGING MARKETS - GROSS	590	4.25	9.51	1.35	9.51	(14.39)	41.09	10.79	(13.23)	(0.48)	12.25	4.82	10.31	8.91	04/01/2004
	ESTIMATED INVESTMENT FEES			(0.11)	(0.30)	(0.11)	(0.34)	(0.62)	(0.53)	(0.44)	(0.50)	(0.48)	(0.48)			
	FIRE-TOTAL ACTIVE EMERGING MARKETS - NET MGR			9.40	1.05	9.40	(14.73)	40.47	10.27	(13.67)	(0.98)	11.77	4.34			
	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			(0.51)	0.45	(0.51)	(0.16)	3.18	(0.92)	1.24	1.21	1.09	0.66	1.37	0.98	
160	FIRE-TOTAL PASSIVE EMERGING MARKETS - GROSS	268	1.93	10.05	0.73	10.05	(14.44)	37.41	11.23	(14.86)	(2.23)	10.77	3.80	1.24	04/01/2011	
	ESTIMATED INVESTMENT FEES			(0.01)	(0.02)	(0.01)	0.01	(0.15)	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)			
	FIRE-TOTAL PASSIVE EMERGING MARKETS - NET MGR			10.04	0.71	10.04	(14.43)	37.25	11.17	(14.91)	(2.29)	10.72	3.75			
	MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)	10.68	3.68	1.18		
	EXCESS RETURN			0.13	0.12	0.13	0.14	(0.03)	(0.02)	0.01	(0.10)	0.04	0.07	0.07		
170	FIRE-TOTAL INTERNATIONAL FUND OF FUNDS - GROSS	71	0.51	10.23	(3.22)	10.23	(14.36)							4.49	05/01/2017	
	ESTIMATED INVESTMENT FEES			(0.09)	(0.25)	(0.09)	(0.30)							(0.36)		
	FIRE-TOTAL INTERNATIONAL FUND OF FUNDS - NET MGR			10.14	(3.47)	10.14	(14.65)							4.13		
	MSCI ACWI EX USA IMI NET			10.30	(2.42)	10.30	(14.76)							4.51		
	EXCESS RETURN			(0.17)	(1.06)	(0.17)	0.10							(0.38)		
180	FIRE-TOTAL GLOBAL EQUITY - GROSS	206	1.48	17.55	2.99	17.55								2.11	06/01/2018	
	ESTIMATED INVESTMENT FEES			(0.19)	(0.43)	(0.19)								(0.47)		
	FIRE-TOTAL GLOBAL EQUITY - NET MGR			17.35	2.57	17.35								1.64		
	MSCI AC WORLD (DAILY CONST)			12.18	2.06	12.18								1.50		
	EXCESS RETURN			5.18	0.51	5.18								0.14		

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EQUITY RETURN DETAIL															
198	FIRE-TOTAL HEDGE FUNDS* - NET MGR	811	5.84	1.86	0.70	1.86	2.09	9.80	3.20	(1.68)	5.35	6.07	3.86	3.78	07/01/2011
	HFRI FUND OF FUNDS COMPOSITE INDEX + 1%			4.89	0.45	4.89	(3.06)	8.84	1.52	0.73	4.40	4.98	3.23	3.52	
	EXCESS RETURN			(3.03)	0.25	(3.03)	5.14	0.96	1.68	(2.41)	0.95	1.09	0.63	0.26	
208	FIRE-TOTAL DIRECT HEDGE FUNDS* - NET MGR	810	5.83	1.86	0.70	1.86	2.17	10.56	3.00	(1.36)	5.76	6.26	4.14	4.79	01/01/2012
	HFRI FUND OF FUNDS COMPOSITE INDEX + 1%			4.89	0.45	4.89	(3.06)	8.84	1.52	0.73	4.40	4.98	3.23	4.50	
	EXCESS RETURN			(3.03)	0.26	(3.03)	5.23	1.71	1.48	(2.09)	1.37	1.29	0.91	0.29	
218	FIRE-TOTAL PERMAL HEDGE FUNDS OF FUNDS* - NET MGR	1	0.00	1.68	(1.38)	1.68	(0.84)	2.07	4.58	(3.52)	3.11	2.92	1.10	2.04	07/01/2011
	HFRI FUND OF FUNDS COMPOSITE INDEX + 1%			4.89	0.45	4.89	(3.06)	8.84	1.52	0.73	4.40	4.98	3.23	3.52	
	EXCESS RETURN			(3.21)	(1.83)	(3.21)	2.22	(6.77)	3.06	(4.26)	(1.28)	(2.05)	(2.12)	(1.48)	

* INFORMATION PROVIDED BY ALPHA FRONTIER

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EQUITY RETURN DETAIL																
226	FIRE-TOTAL REAL ESTATE SECURITIES - GROSS ESTIMATED INVESTMENT FEES	183	1.32	16.55 (0.12)	9.07 (0.34)	16.55 (0.12)	(6.09) (0.39)	8.71 (0.42)	3.95 (0.28)	1.39 (0.34)	28.21 (0.46)	5.88 (0.38)	8.33 (0.38)	18.32	11.23	01/01/2003
	FIRE-TOTAL REAL ESTATE SECURITIES - NET MGR			16.43	8.74	16.43	(6.48)	8.30	3.67	1.05	27.75	5.50	7.95			
	DJ US SELECT REAL ESTATE SECURITIES INDEX			15.72	8.86	15.72	(4.22)	3.76	6.65	4.46	31.85	5.29	8.91	18.52	10.57	
	EXCESS RETURN			0.71	(0.12)	0.71	(2.26)	4.53	(2.98)	(3.41)	(4.11)	0.21	(0.96)	(0.19)	0.66	
236	FIRE-TOTAL PRIVATE EQUITY (TIME WEIGHTED) NYC R3000 +3% LAGGED	920	6.62	(0.38) (13.63)	8.97 (2.48)	(0.38) (13.63)	18.87 21.06	23.66 22.22	10.84 18.37	11.71 2.49	15.81 21.24	16.63 12.22	15.05 11.13	13.71 17.02	13.51 12.22	04/01/2004
	EXCESS RETURN			13.25	11.44	13.25	(2.19)	1.45	(7.54)	9.22	(5.43)	4.41	3.91	(3.31)	1.29	
246	FIRE-TOTAL PRIVATE REAL ESTATE (TIME WEIGHTED) NCREIF NFI-ODCE NET + 100 BP	578	4.16	1.29 1.45	6.03 5.43	1.29 1.45	10.88 8.43	11.52 7.72	11.46 8.86	15.25 15.08	17.21 12.56	10.68 8.07	12.31 10.26	7.76	8.38	04/01/2004
	EXCESS RETURN			(0.15)	0.59	(0.15)	2.45	3.79	2.60	0.17	4.65	2.61	2.05			
256	FIRE-TOTAL INFRASTRUCTURE (TIME WEIGHTED) CPI + 4%	118	0.85	1.93 1.55	9.62 4.35	1.93 1.55	10.05 6.03	27.94 6.20	10.72 6.17	15.95 4.69	20.21 4.69	15.93 6.30	19.68 5.56	16.08	5.62	12/01/2013
	EXCESS RETURN			0.38	5.27	0.38	4.02	21.74	4.55	11.26	15.52	9.62	14.12	10.46		

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FIXED INCOME RETURN DETAIL																
268	FIRE-TOTAL FIXED INCOME - GROSS	4,872	35.08	3.92	4.17	3.92	(0.38)	5.40	5.66	(0.43)	5.94	4.04	3.48	5.70	8.00	02/01/1980
	ESTIMATED INVESTMENT FEES			(0.04)	(0.10)	(0.04)	(0.12)	(0.13)	(0.14)	(0.09)	(0.15)	(0.13)	(0.13)			
	EST MANAGEMENT FEES			(0.04)	(0.10)	(0.04)	(0.12)	(0.13)	(0.14)	(0.09)	(0.15)	(0.13)	(0.13)			
	EST INCENTIVE FEES															
	EST OTHER FEES															
	EST FEE OFFSETS															
	FIRE-TOTAL FIXED INCOME - NET MGR			3.88	4.07	3.88	(0.50)	5.27	5.52	(0.52)	5.79	3.91	3.35			
276	FIRE-TOTAL STRUCTURED FIXED INCOME - GROSS	2,186	15.74	3.57	5.14	3.57	(0.85)	5.22	3.97	0.17	7.66	2.87	3.37	5.06	7.55	01/01/1985
	ESTIMATED INVESTMENT FEES			(0.01)	(0.03)	(0.01)	(0.04)	(0.06)	(0.07)	(0.08)	(0.06)	(0.06)	(0.06)			
	FIRE-TOTAL STRUCTURED FIXED INCOME - NET MGR			3.56	5.11	3.56	(0.89)	5.16	3.90	0.10	7.57	2.81	3.31			
	NYC CUSTOM STRUCTURED INDEX-FIRE			4.24	5.58	4.24	(1.29)	6.95								
	EXCESS RETURN			(0.67)	(0.47)	(0.67)	0.40	(1.78)								
286	FIRE-TOTAL CORE FI- DEVELOPING MGRS - GROSS	46	0.33	3.79	4.72	3.79	(1.01)	4.16	3.89	1.36	5.74	2.52	3.19	4.72	05/01/2009	
	ESTIMATED INVESTMENT FEES			(0.05)	(0.16)	(0.05)	(0.20)	(0.20)	(0.21)	(0.19)	(0.17)	(0.20)	(0.20)			
	FIRE-TOTAL CORE FI- DEVELOPING MGRS - NET MGR			3.74	4.57	3.74	(1.21)	3.95	3.68	1.17	5.57	2.32	3.00			
	BBG BARC AGG (DLY)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97	2.03	2.74	3.75		
	EXCESS RETURN			0.80	(0.08)	0.80	(1.22)	0.41	1.04	0.62	(0.39)	0.29	0.26	0.97		
296	FIRE-TOTAL CORE FI- EMERGING MGRS - GROSS	31	0.23	3.10	4.79	3.10	0.29	4.51	3.19	1.13	6.21	2.78	3.20	3.29	03/01/2012	
	ESTIMATED INVESTMENT FEES			(0.09)	(0.27)	(0.09)	(0.34)	(0.48)	(0.22)	(0.35)	(0.36)	(0.35)	(0.35)			
	FIRE-TOTAL CORE FI- EMERGING MGRS - NET MGR			3.01	4.52	3.01	(0.05)	4.02	2.97	0.78	5.85	2.43	2.85			
	BBG BARC AGG (DLY)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97	2.03	2.74	2.37		
	EXCESS RETURN			0.07	(0.12)	0.07	(0.06)	0.48	0.32	0.23	(0.12)	0.41	0.11	0.93		
306	FIRE-TOTAL TIPS - GROSS	606	4.36	3.24	1.93	3.24	(1.25)	3.06	4.65	(1.31)	3.59	1.72	1.96	3.47	3.70	06/01/2005
	ESTIMATED INVESTMENT FEES			(0.00)	(0.01)	(0.00)	(0.02)	(0.02)	(0.02)	(0.03)	(0.07)	(0.02)	(0.03)			
	FIRE-TOTAL TIPS - NET MGR			3.24	1.92	3.24	(1.27)	3.04	4.63	(1.34)	3.52	1.70	1.93			
	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	(0.00)	0.04	(0.01)	0.03	(0.05)	0.09	(0.12)	0.00	(0.01)	0.06	0.13	
316	FIRE-TOTAL HIGH YIELD - GROSS	803	5.78	7.07	4.17	7.07	(2.94)	7.53	14.46	(3.07)	2.54	7.72	4.27	9.53	7.99	12/01/1994
	ESTIMATED INVESTMENT FEES			(0.09)	(0.24)	(0.09)	(0.29)	(0.32)	(0.37)	(0.34)	(0.35)	(0.33)	(0.34)			
	FIRE-TOTAL HIGH YIELD - NET MGR			6.98	3.93	6.98	(3.24)	7.21	14.09	(3.40)	2.19	7.39	3.93			
	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	6.95	
	EXCESS RETURN			(0.28)	(0.92)	(0.28)	(0.90)	0.18	(1.39)	0.81	(0.59)	(0.52)	(0.43)	(0.00)	1.04	
326	FIRE- TOTAL BANK LOANS - GROSS	210	1.51	3.39	2.32	3.39	1.18	4.51	8.55	1.47	2.82	5.50	4.08	4.64	12/01/2012	
	ESTIMATED INVESTMENT FEES			(0.09)	(0.27)	(0.09)	(0.36)	(0.38)	(0.41)	(0.38)	(0.39)	(0.38)	(0.38)			
	FIRE-TOTAL BANK LOANS - NET MGR			3.30	2.05	3.30	0.81	4.14	8.15	1.09	2.43	5.12	3.70			
	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			(0.48)	(0.47)	(0.48)	(0.33)	(0.11)	(1.73)	1.48	0.38	(0.75)	(0.13)	0.32		

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FIXED INCOME RETURN DETAIL																
338	FIRE-TOTAL CONVERTIBLE BONDS - GROSS	236	1.70	6.46	3.52	6.46	(1.44)	8.44	7.74	(0.91)	5.16	6.97	4.24	9.11	6.14	07/01/2008
	ESTIMATED INVESTMENT FEES			(0.12)	(0.37)	(0.12)	(0.48)	(0.52)	(0.54)	(0.51)	(0.54)	(0.52)	(0.52)			
	FIRE-TOTAL CONVERTIBLE BONDS - NET MGR			6.33	3.15	6.33	(1.92)	7.92	7.20	(1.42)	4.62	6.45	3.72			
	BOFAML ALL CONVERTIBLE EX M AI (DAILY)			10.08	3.93	10.08	0.65	15.70	11.71	(2.75)	9.33	13.69	7.84	13.40	8.88	
	EXCESS RETURN			(3.75)	(0.78)	(3.75)	(2.57)	(7.78)	(4.51)	1.32	(4.71)	(7.25)	(4.12)	(4.29)	(2.74)	
348	FIRE-TOTAL OPPORTUNISTIC FIXED INCOME	415	2.99	1.36	3.80	1.36	6.54	8.42	9.53	(3.02)	7.41	9.73	5.32	11.81	8.41	11/01/2007
	OPPORTUNISTIC FIXED INCOME JPMGHY / CSFB 50/50 BLEND PLUS 300			6.18	6.12	6.18	2.36	9.42	17.40	0.63	4.93	10.65	7.46	12.99	9.07	
	EXCESS RETURN			(4.82)	(2.33)	(4.82)	4.18	(1.00)	(7.87)	(3.65)	2.48	(0.92)	(2.14)	(1.18)	(0.66)	
358	FIRE-TOTAL TARGETED INVESTMENTS (NO CASH) - GROSS	103	0.74	2.78	5.21	2.78	0.93	3.98	2.37	3.06	6.90	2.29	3.62	3.92	7.19	12/01/1984
	ESTIMATED INVESTMENT FEES			(0.07)	(0.22)	(0.07)	(0.28)	(0.30)	(0.32)	(0.32)	(0.36)	(0.29)	(0.31)	(0.35)	(0.18)	
	FIRE-TOTAL TARGETED INVESTMENTS (NO CASH) - NET MGR			2.72	5.00	2.72	0.65	3.68	2.04	2.73	6.54	2.00	3.31	3.57	7.01	
	FIRE CUSTOM BENCHMARK (NO CASH)			2.56	4.48	2.56	0.68	3.19	2.46	1.05	5.75	2.07	2.79	3.55		
	EXCESS RETURN			0.16	0.52	0.16	(0.04)	0.49	(0.41)	1.68	0.79	(0.07)	0.52	0.03		
CASH SUMMARY																
370	Short Term FIRE - GROSS	236	1.70	0.61	1.71	0.61	1.97	1.13	0.88	0.32	0.21	1.41	1.02	0.75	3.55	12/01/1989
	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 FIRE - NET MGR			0.61	1.71	0.61	1.97	1.13	0.88	0.32	0.21	1.41	1.02	0.75		
374	KKR Cash Account	0	0.00													
376	Cash Account	0	0.00													
378	Securities Lending	0	0.00													

New York City
Fire Department Pension Fund, Subchapter Two

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	79	0.57	17.14	(3.01)	17.14	(9.14)	22.26	11.29	(1.29)	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)	0.09	(0.11)
BlackRock US SCV R2000	4	0.03	11.99	(7.47)	11.99	(12.79)	7.34	31.71	(7.33)	3.80
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)	0.13	(0.41)
Brown Asset Mgmt US SCG	69	0.50	19.27	2.80	19.27	1.06	28.87	10.25	8.61	2.92
RUSSELL 2000 GROWTH DAILY			17.14	(3.15)	17.14	(9.31)	22.17	11.32	(1.38)	5.60
Excess			2.12	5.95	2.12	10.37	6.70	(1.07)	9.99	(2.68)
Ceredex US SCV	84	0.61	11.26	(5.94)	11.26	(11.72)	10.66	29.36	(4.73)	2.54
RUSSELL 2000 VALUE DAILY			11.93	(7.51)	11.93	(12.86)	7.84	31.74	(7.47)	4.22
Excess			(0.67)	1.57	(0.67)	1.14	2.83	(2.38)	2.74	(1.68)
Dalton US SCV	62	0.45	13.00	(6.46)	13.00	(17.30)	8.38	25.01	(3.32)	4.47
RUSSELL 2000 VALUE DAILY			11.93	(7.51)	11.93	(12.86)	7.84	31.74	(7.47)	4.22
Excess			1.08	1.04	1.08	(4.43)	0.55	(6.73)	4.15	0.25
Iridian US MCC	118	0.85	19.42	(6.36)	19.42	(23.30)	23.23	4.19	(3.71)	14.03
RUSSELL MIDCAP (DAILY)			16.54	3.55	16.54	(9.06)	18.52	13.80	(2.44)	13.22
Excess			2.89	(9.91)	2.89	(14.24)	4.71	(9.60)	(1.27)	0.82
Wellington US MCC	167	1.20	20.30	3.61	20.30	(7.35)	25.09	12.29	1.78	10.93
S&P 400 MIDCAP INDEX (DAILY)			14.49	(1.63)	14.49	(11.08)	16.24	20.74	(2.18)	9.77
Excess			5.81	5.24	5.81	3.74	8.84	(8.45)	3.95	1.17

1 Name changed from SSGA MSCI EAFE Small Cap Index 12.2017

2 Assets were in transition from 9/29/17 to 2/1/19

3 Assets were in transition from 9/29/17 to 11/30/17

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 US LC R1000 Growth	0	0.00					30.24	7.16	5.66	12.91
RUSSELL 1000 GROWTH - DAILY							30.21	7.08	5.67	13.05
Excess							0.03	0.08	(0.01)	(0.14)
BlackRock US LC R1000 Value	0	0.00					13.65	17.48	(3.90)	13.39
RUSSELL 1000 VALUE (DAILY)							13.66	17.34	(3.83)	13.45
Excess							(0.01)	0.14	(0.08)	(0.06)
BlackRock US LMC R1000 Core	2,330	16.78	13.98	5.69	13.98					
RUSSELL 1000 (DAILY)			14.00	5.54	14.00					
Excess			(0.02)	0.15	(0.02)					
RAFI US LMCE	396	2.85	11.66	2.82	11.66	(6.74)	16.88			
RUSSELL 1000 (DAILY)			14.00	5.54	14.00	(4.78)	21.69			
Excess			(2.34)	(2.72)	(2.34)	(1.96)	(4.81)			
SSGA US LMC Top 200 Core	771	5.55	13.03	6.35	13.03					
RUSSELL TOP 200 INDEX (DAILY)			13.05	6.32	13.05					
Excess			(0.02)	0.02	(0.02)					
FUND OF FUNDS										
FIRE-TOTAL FUND OF FUNDS	21	0.15	14.33	(2.00)	14.33	(8.21)				
RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)				
Excess			(0.26)	3.30	(0.26)	2.80				
FIRE-TOTAL LEGATO	21	0.15	14.33	(2.00)	14.33	(8.19)				
RUSSELL 2000 (DAILY)			14.58	(5.29)	14.58	(11.01)				
Excess			(0.26)	3.30	(0.26)	2.82				

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
NON - US EQUITY										
Baillie Gifford WorldxUS LMCC	197	1.42	19.35	(5.85)	19.35	(15.37)	44.17	0.70	(3.81)	(6.77)
NYC Developed Growth Benchmark			10.45	(2.41)	10.45	(14.09)	27.77	(3.04)	4.09	(4.43)
Excess			8.90	(3.44)	8.90	(1.28)	16.40	3.74	(7.90)	(2.34)
Walter Scott WorldxUS LMCC	244	1.75	11.77	3.21	11.77	(7.65)	28.12	5.03	0.28	(3.76)
NYC Developed Growth Benchmark			10.45	(2.41)	10.45	(14.09)	27.77	(3.04)	4.09	(4.43)
Excess			1.32	5.62	1.32	6.44	0.35	8.07	(3.81)	0.67
Causeway WorldxUS LMCC	198	1.43	10.62	(4.46)	10.62	(18.34)	28.22	0.52	(2.39)	(4.91)
NYC Developed Value Benchmark			10.45	(2.41)	10.45	(14.09)	22.77	5.02	(5.68)	(5.39)
Excess			0.17	(2.05)	0.17	(4.25)	5.45	(4.51)	3.29	0.48
Sprucegrove WorldxUS LMCC	239	1.72	9.46	(1.89)	9.46	(13.67)	27.20	11.10	(9.44)	(3.32)
NYC Developed Value Benchmark			10.45	(2.41)	10.45	(14.09)	22.77	5.02	(5.68)	(5.39)
Excess			(0.99)	0.52	(0.99)	0.42	4.44	6.08	(3.75)	2.07
Acadian WorldxUS SCC	73	0.53	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)
Fidelity WorldxUS SCC	28	0.20	9.64	(9.79)	9.64	(18.22)	31.28	(0.80)	11.96	(5.60)
S&P EPAC Small Cap USD NET			9.92	(8.54)	9.92	(18.58)	33.47	1.34	8.58	(3.43)
Excess			(0.29)	(1.25)	(0.29)	0.36	(2.19)	(2.14)	3.38	(2.17)
Algert EAFE SCC	19	0.13								
MSCI EAFE SMALL CAP NET (DAILY)										
Excess										
SSGA WorldxUS LMC NYC Custom IDX	125	0.90	10.46	(1.97)	10.46	(13.64)	24.43	1.28	(0.55)	(4.75)
NYC Custom World ex US Index			10.45	(2.41)	10.45	(14.09)	24.12	1.00	(0.81)	(4.90)
Excess			0.01	0.44	0.01	0.45	0.32	0.28	0.27	0.15

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
SSGA WorldxUS SC Custom IDX ¹	48	0.35	10.79	(7.76)	10.79	(17.97)	33.43	2.77	9.86	
World ex USA SC PASSIVE CUSTOM BM			10.93	(7.80)	10.93	(18.07)	33.31	2.18	9.59	
Excess			(0.14)	0.03	(0.14)	0.10	0.12	0.59	0.27	
EMERGING MARKETS										
Baillie Gifford EM	160	1.15	14.74	5.35	14.74	(15.37)	54.13	2.78	(7.99)	0.10
MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)
Excess			4.82	4.75	4.82	(0.80)	16.85	(8.41)	6.92	2.28
Acadian EM	137	0.99	8.10	(2.40)	8.10	(17.27)	40.45	12.65	(15.05)	3.79
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	1.46	(0.13)	5.97
Eaton Vance EM	148	1.07	7.66	(0.24)	7.66	(14.33)	29.65	13.85	(15.72)	(3.88)
MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)
Excess			(2.25)	(0.84)	(2.25)	0.24	(7.63)	2.67	(0.81)	(1.69)
DFA EM	145	1.04	6.89	1.21	6.89	(12.06)	33.64	17.36	(19.25)	(4.39)
MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)
Excess			(3.03)	0.62	(3.03)	2.51	(3.64)	6.17	(4.33)	(2.20)
BlackRock MSCI EM Core	268	1.93	10.04	0.71	10.04	(14.43)	37.25	11.17	(14.91)	(2.29)
MSCI EMERGING MARKETS			9.92	0.60	9.92	(14.57)	37.28	11.19	(14.92)	(2.19)
Excess			0.13	0.12	0.13	0.14	(0.03)	(0.02)	0.01	(0.10)
INTERNATIONAL FOF										
FIRE-TOTAL INTERNATIONAL FOF	71	0.51	10.14	(3.47)	10.14	(14.65)				
MSCI ACWI ex USA IMI Net			10.30	(2.42)	10.30	(14.76)				
Excess			(0.17)	(1.06)	(0.17)	0.10				
FIRE-TOTAL INTERNATIONAL FIS	71	0.51	10.14	(3.47)	10.14	(14.65)				
MSCI ACWI ex USA IMI Net			10.30	(2.42)	10.30	(14.76)				
Excess			(0.17)	(1.06)	(0.17)	0.10				

¹ Name changed from SSGA MSCI EAFE Small Cap Index 12.2017

² Assets were in transition from 9/29/17 to 2/1/19

³ Assets were in transition from 9/29/17 to 11/30/17

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
GLOBAL EQUITY										
Fiera WorldxUS	106	0.76	15.55		15.55					
MSCI World Index			12.48		12.48					
Excess			3.07		3.07					
Morgan Stanley WorldxUS	99	0.72	19.35	(0.19)	19.35					
MSCI AC WORLD (Daily Const)			12.18	2.06	12.18					
Excess			7.17	(2.24)	7.17					
REAL ESTATE SECURITIES										
FIRE-MS REIT	73	0.52	14.93	5.79	14.93	(7.88)	9.26	3.49	(1.63)	30.72
Morgan Stanley Custom RESI Index			14.35	8.06	14.35	(5.46)	10.27	2.37	(1.53)	31.85
Excess			0.58	(2.26)	0.58	(2.42)	(1.01)	1.13	(0.11)	(1.13)
Adelante REITS	110	0.80	17.44	10.76	17.44	(5.49)	7.34	3.90	4.82	33.07
DJ US SELECT REAL ESTATE SECURITIES INDEX			15.72	8.86	15.72	(4.22)	3.76	6.65	4.46	31.85
Excess			1.72	1.90	1.72	(1.27)	3.58	(2.75)	0.36	1.21
FIXED INCOME SUMMARY										
STRUCTURED FIXED INCOME										
Taplin Credit	46	0.33	5.55	5.21	5.55	(3.48)	8.08	9.52	(3.74)	7.73
NYC - Investment Grade Credit			4.72	5.82	4.72	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.83	(0.60)	0.83	(1.58)	2.05	3.97	(3.10)	0.69
T Rowe Price Credit	158	1.14	4.90	5.88	4.90	(2.41)	6.89	6.00	0.16	7.74
NYC - Investment Grade Credit			4.72	5.82	4.72	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.18	0.07	0.18	(0.51)	0.86	0.44	0.80	0.70
BlackRock Credit	98	0.70	5.04	5.82	5.04	(2.01)	6.12	5.43	(0.61)	7.43
NYC - Investment Grade Credit			4.72	5.82	4.72	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.32	0.01	0.32	(0.11)	0.09	(0.13)	0.04	0.39

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3 Assets were in transition from 9/29/17 to 11/30/17

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
Prudential Credit	73	0.53	4.76	5.80	4.76	(1.81)	6.32	5.97	(0.18)	7.19
NYC - Investment Grade Credit			4.72	5.82	4.72	(1.90)	6.04	5.56	(0.65)	7.04
Excess			0.04	(0.02)	0.04	0.09	0.28	0.41	0.47	0.14
BlackRock Mortgages	238	1.72	2.36	4.31	2.36	0.97	2.66	2.19	1.72	6.77
FTSE MORTGAGE INDEX			2.16	4.21	2.16	1.01	2.47	1.59	1.56	6.12
Excess			0.20	0.10	0.20	(0.04)	0.19	0.60	0.16	0.64
Neuberger Berman Mortgages	107	0.77	2.15	4.06	2.15	0.81	2.42	1.52	1.38	6.66
FTSE MORTGAGE INDEX			2.16	4.21	2.16	1.01	2.47	1.59	1.56	6.12
Excess			(0.02)	(0.15)	(0.02)	(0.20)	(0.05)	(0.06)	(0.18)	0.54
Fischer Francis LI Treasury	0	0.00					4.67	1.35	0.52	11.44
NYC - Treasury Agency Plus Five							4.66	1.21	0.72	12.38
Excess							0.01	0.14	(0.20)	(0.94)
SSGA LI Treasury	791	5.69	3.43	5.53	3.43	(0.20)	4.81	1.47	0.47	12.15
NYC - Treasury Agency Plus Five			3.37	5.57	3.37	(0.05)	4.66	1.21	0.72	12.38
Excess			0.06	(0.03)	0.06	(0.15)	0.16	0.26	(0.25)	(0.23)
SSGA IT Treasury 1-10Y ²	6	0.05	1.48	2.63	1.48	2.03				
FTSE USBIG Treasury/Agency 1-10 y			1.58	3.69	1.58	1.42				
Excess			(0.10)	(1.06)	(0.10)	0.61				
91 DAY TREASURY BILL (DAILY)			0.60	1.66	0.60	1.87				
Excess			0.88	0.97	0.88	0.16				
SSGA ST Treasury 1-3Y ³	181	1.30	0.99	2.49	0.99	1.53	1.78			
FTSE USBIG Treasury 1-3 Y Index			0.99	2.48	0.99	1.56	0.42			
Excess			(0.00)	0.01	(0.00)	(0.03)	1.36			
91 DAY TREASURY BILL (DAILY)			0.60	1.66	0.60	1.87	0.86			
Excess			0.39	0.82	0.39	(0.35)	0.92			

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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
SSGA LT Treasury 10Y Plus	487	3.51	4.67	5.86	4.67	(1.83)	8.54			
FTSE Treasury 10+			4.70	5.84	4.70	(1.89)	8.60			
Excess			(0.04)	0.02	(0.04)	0.05	(0.07)			
CORE FI-EMERGING MANAGERS										
Hillswick Core-Core Plus	3	0.02	2.61	4.73	2.61	0.33	2.64	2.61	0.61	7.09
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97
Excess			(0.33)	0.08	(0.33)	0.32	(0.90)	(0.03)	0.06	1.13
Integrity Core-Core Plus	3	0.02	2.78	4.35	2.78	(0.03)	3.93			
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54			
Excess			(0.17)	(0.30)	(0.17)	(0.04)	0.39			
New Century Core-Core Plus	8	0.06	2.94	4.49	2.94	0.12	4.04	2.37	(0.30)	6.53
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97
Excess			(0.00)	(0.16)	(0.00)	0.11	0.50	(0.28)	(0.85)	0.56
Pugh Core-Core Plus	9	0.07	2.98	4.41	2.98	(0.42)	4.12	3.48	0.79	5.88
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97
Excess			0.04	(0.24)	0.04	(0.43)	0.58	0.83	0.24	(0.09)
Ramirez Core-Core Plus	8	0.06	3.36	4.68	3.36	0.07	4.47	3.64	1.12	
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	
Excess			0.41	0.04	0.41	0.06	0.93	0.99	0.57	
HIGH YIELD										
Brigade High Yield	54	0.39	7.27		7.27					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			0.02		0.02					

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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
Loomis Sayles High Yield	0	0.00					7.32	19.72	(8.98)	2.88
BofAML HIGH YIELD MASTER II (DAILY)							7.48	17.49	(4.64)	2.50
Excess							(0.16)	2.23	(4.33)	0.37
Eaton Vance High Yield	86	0.62	7.12		7.12					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			(0.13)		(0.13)					
Mackay Shields High Yield	83	0.59	6.84		6.84					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			(0.42)		(0.42)					
Nomura High Yield	53	0.38	6.70		6.70					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			(0.56)		(0.56)					
Penn High Yield	-0	-0.00					6.63	11.92	(1.31)	0.39
FTSE BB & B							7.03	15.48	(4.21)	2.78
Excess							(0.40)	(3.55)	2.90	(2.39)
Shenkman High Yield	152	1.10	6.68		6.68					
BBG BARC US HY - 2% Issr Cap			7.26		7.26					
Excess			(0.57)		(0.57)					
T Rowe Price High Yield	374	2.70	7.12	5.53	7.12	(2.34)	7.29	12.24	(1.28)	2.91
BBG BARC US HY - 2% Issr Cap			7.26	4.85	7.26	(2.08)	7.50	17.13	(4.43)	2.46
Excess			(0.14)	0.68	(0.14)	(0.26)	(0.22)	(4.89)	3.16	0.45
Transition High Yield	1	0.01								

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
BANK LOANS										
Barings Bank Loans	104	0.75	3.77	2.01	3.77	0.38	4.47	8.46	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	(1.41)	0.50	(0.07)
GUGGENHEIM BANK LOANS										
Guggenheim Bank Loans	106	0.76	2.85	2.09	2.85	1.24	3.82	7.84	2.07	2.88
CSFB LEVERAGED LOAN INDEX			3.78	2.53	3.78	1.14	4.25	9.88	(0.38)	2.06
Excess			(0.93)	(0.43)	(0.93)	0.10	(0.43)	(2.03)	2.45	0.83
TIPS										
BlackRock TIPS	154	1.11	3.24	1.92	3.24	(1.18)	2.98	4.75	(1.24)	3.74
BBG BARC Gbl Inf-Lk: US TIPS (Dly)			3.19	1.92	3.19	(1.26)	3.01	4.68	(1.44)	3.64
Excess			0.05	0.00	0.05	0.08	(0.02)	0.07	0.20	0.10
SSGA TIPS										
SSGA TIPS	452	3.25	3.24	1.92	3.24	(1.30)	3.06	4.59	(1.35)	3.57
BBG BARC Gbl Inf-Lk: US TIPS (Dly)			3.19	1.92	3.19	(1.26)	3.01	4.68	(1.44)	3.64
Excess			0.04	(0.00)	0.04	(0.04)	0.05	(0.09)	0.09	(0.07)
CONVERTIBLE BONDS										
Advent Convertible Bonds	236	1.70	6.33	3.15	6.33	(1.92)	7.92	7.20	(1.42)	4.62
BofA ML U.S. Convertible Yield Alternative			6.29	2.27	6.29	(0.42)	9.45	9.96	(8.77)	2.75
Excess			0.04	0.88	0.04	(1.51)	(1.53)	(2.76)	7.35	1.87
CORE FI-DEVELOPING MANAGERS										
LM Capital Core-Core Plus	23	0.17	3.66	4.64	3.66	(1.30)	3.92	3.43	1.02	5.57
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65	0.55	5.97
Excess			0.72	(0.01)	0.72	(1.32)	0.38	0.78	0.47	(0.39)
GIA Core-Core Plus										
GIA Core-Core Plus	22	0.16	3.82	4.49	3.82	(1.11)	3.99	3.96		
BBG BARC Agg (Dly)			2.94	4.65	2.94	0.01	3.54	2.65		
Excess			0.88	(0.16)	0.88	(1.12)	0.45	1.31		

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
ECONOMICALLY TARGETED INVESTMENTS										
AFL-CIO Housing Investment Trust	57	0.41	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
RBC Access MBS	26	0.19	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
CPC Construction Facility	2	0.01	1.31	3.39	1.31	4.14	6.06	(3.95)	12.90	
CPC CONST BENCHMARK			1.06	3.14	1.06	3.99	3.34	3.03	2.90	
Excess			0.25	0.26	0.25	0.15	2.73	(6.99)	10.01	
BOA PPAR FNMA	3	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	2	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
Citibank PPAR GNMA	1	0.01	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	2	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

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
JPMC PPAR FNMA	5	0.03	3.24	7.45	3.24	1.68	9.96	7.94	6.18	11.95
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	4.82
LIIF PPAR FNMA	3	0.02	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	1	0.01	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
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					

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
CASH										
Short Term FIRE	236	1.70	0.61	1.71	0.61	1.97	1.13	0.88	0.32	0.21
91 DAY TREASURY BILL (DAILY)			0.60	1.66	0.60	1.87	0.86	0.33	0.05	0.03
Excess			0.01	0.05	0.01	0.09	0.27	0.56	0.26	0.18
KKR Cash Account	0	0.00								
Cash Account	0	0.00								
Securities Lending	0	0.00								

New York City
Fire Department Pension Fund, Subchapter Two

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		2,130,389,552	1,750,444,680	1,659,300,449	921,857,692	1.47	11.3%
TOTAL LIQUIDATED		155,744,033	173,138,666	231,704,093	-	1.34	8.6%
TOTAL ACTIVE		1,974,645,519	1,577,306,014	1,427,596,356	921,857,692	1.49	11.8%

TOTAL ACTIVE							
Cypress Merchant Banking Partners II, L.P.	1999	22,586,486	26,972,134	25,292,077	13,081	0.94	-1.2%
Lincolnshire Equity Fund II, L.P.	1999	6,899,005	7,223,050	14,015,738	280,186	1.98	24.6%
SCP Private Equity Partners II, L.P.	2000	15,000,000	16,834,296	6,514,303	1,778,989	0.49	-8.1%
Apollo Investment Fund V, L.P.	2001	15,000,000	23,379,009	46,122,367	149,064	1.98	38.8%
CVC European Equity Partners III, L.P.	2001	10,000,000	11,880,366	29,775,858	684,367	2.56	41.0%
Landmark Equity Partners XI, L.P.	2002	5,000,000	4,753,167	7,305,360	12,260	1.54	23.3%
Ares Corporate Opportunities Fund, L.P.	2003	5,000,000	5,998,308	8,941,880	300,641	1.54	13.4%
Blackstone Capital Partners IV, L.P.	2003	13,875,989	17,160,208	40,790,573	1,191,202	2.45	36.3%
FS Equity Partners V, L.P.	2003	10,000,000	8,567,981	16,744,589	870,126	2.06	15.5%
Aurora Equity Partners III L.P.	2004	5,000,000	5,412,677	8,743,588	37,549	1.62	13.5%
FdG Capital Partners II LP	2004	5,000,000	5,387,768	6,228,579	331,162	1.22	3.8%
Lincolnshire Equity Fund III, L.P.	2004	5,000,000	4,994,501	7,066,602	1,937,489	1.80	28.6%
Markstone Capital Partners, LP	2004	5,000,000	5,862,384	2,477,825	34,027	0.43	-45.0%
Medica III Investments (International) L.P.	2004	3,000,000	2,992,836	1,267,948	722,000	0.66	-8.1%
New York/Fairview Emerging Managers Fund, L.P.-Tranche 1	2004	2,000,000	2,053,879	1,900,414	436,727	1.14	2.2%
Paladin Homeland Security Fund (NY City), L.P.	2004	7,500,000	8,256,642	3,143,003	11,099	0.38	-14.2%
Yucaipa American Alliance Fund I, LP	2004	5,000,000	7,491,869	7,275,045	1,898,641	1.22	4.8%
Arlington Capital Partners II, L.P.	2005	4,000,000	4,069,527	6,842,637	317,136	1.76	11.3%
Blackstone Mezzanine Partners II, L.P.	2005	2,561,603	2,866,163	3,810,696	30,681	1.34	7.8%
Carlyle Partners IV, L.P.	2005	5,000,000	5,153,158	10,078,088	105,242	1.98	13.0%
FirstMark Capital I, L.P. (fka FirstMark IV)	2005	1,500,000	1,639,064	4,611,677	6,057,434	6.51	33.9%
JP Morgan Fleming (Tranche A)	2005	3,000,000	2,991,998	2,806,313	1,157,125	1.32	5.3%
New Mountain Partners II, L.P.	2005	2,580,650	2,337,304	4,502,540	40,509	1.94	13.6%
Palladium Equity Partners III, L.P.	2005	10,000,000	10,577,602	19,418,004	1,004,326	1.93	15.6%
Prism Venture Partners V-A, L.P.	2005	7,500,000	7,690,681	4,765,525	125,647	0.64	-8.7%
Psilos Group Partners III, L.P.	2005	2,500,000	2,657,559	1,282,054	1,757,350	1.14	2.1%
Snow Phipps Group, L.P.	2005	5,000,000	5,956,871	5,228,654	2,553,720	1.31	6.0%
USPF II Institutional Fund, L.P.	2005	5,000,000	6,594,940	6,608,052	2,009,428	1.31	4.5%
Aisling Capital II, LP	2006	1,000,000	1,178,021	1,141,279	44,414	1.01	0.1%

Information provided by the New York City Fire 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%
Apollo Investment Fund VI, L.P.	2006	20,000,000	25,741,832	36,308,230	2,355,301	1.50	8.6%
Ares Corporate Opportunities Fund II, L.P.	2006	5,000,000	5,476,087	8,835,217	346,957	1.68	13.1%
Arsenal Capital Partners II, LP	2006	4,000,000	4,982,154	7,865,472	1,240,538	1.83	11.7%
Atlantic Equity Partners IV, L.P.	2006	3,768,757	3,464,833	500,936	1,810,900	0.67	-4.7%
Avista Capital Partners, L.P.	2006	5,000,000	6,573,992	8,004,066	142,398	1.24	4.5%
Blackstone Capital Partners V, L.P.	2006	9,448,250	10,049,699	15,585,611	766,138	1.63	8.0%
Capital Partners Private Equity Income Fund, L.P.	2006	2,000,000	1,923,102	4,406,173	49,543	2.32	20.9%
Catterton Partners VI, L.P.	2006	5,000,000	5,693,763	8,325,211	2,339,417	1.87	11.8%
CCMP Capital Investors II, L.P.	2006	5,000,000	5,486,988	9,439,624	4,428	1.72	13.5%
CLP 2014 (fka Perseus Partners VII)	2006	5,000,000	5,849,915	2,300,086	(5,555)	0.39	-20.8%
Coller International Partners V, L.P.	2006	5,000,000	4,372,182	5,659,042	439,351	1.39	7.9%
Euro Choice III L.P.	2006	5,314,225	5,347,612	5,512,868	693,286	1.16	3.0%
Falconhead Capital Partners II, L.P.	2006	4,000,000	4,481,396	4,478,251	1,283,341	1.29	4.6%
Fenway Partners Capital Fund III, L.P.	2006	5,000,000	5,743,510	4,919,243	4,209,595	1.59	7.4%
First Reserve Fund XI, L.P.	2006	5,000,000	5,313,265	3,318,369	279,838	0.68	-8.9%
GF Capital Private Equity Fund, L.P.	2006	3,000,000	3,074,084	3,916,818	1,592,924	1.79	12.4%
InterMedia Partners VII, L.P.	2006	2,500,000	2,919,819	2,959,171	24,921	1.02	0.3%
MidOcean Partners III, L.P.	2006	9,705,796	11,564,899	20,171,480	3,421,324	2.04	12.9%
Permira IV, L.P.	2006	5,505,671	5,968,502	8,625,746	667,526	1.56	8.6%
RRE Ventures IV, L.P.	2006	2,500,000	3,162,574	1,754,151	2,787,121	1.44	5.5%
Terra Firma Capital Partners III, L.P.	2006	5,223,073	5,291,682	1,502,709	877,611	0.45	-9.8%
The Fourth Cinven Fund	2006	2,728,732	2,870,272	4,120,624	2,087	1.44	7.3%
Thomas, McNerney & Partners II, L.P.	2006	3,000,000	3,035,394	6,119,246	530,947	2.19	16.4%
Carlyle Partners V, L.P.	2007	10,000,000	10,306,406	16,604,546	1,678,635	1.77	13.7%
Constellation Venture Capital III, L.P.	2007	5,000,000	5,715,007	2,799,144	1,484,054	0.75	-4.8%
FTVentures III, LP	2007	2,500,000	2,743,841	4,778,178	1,228,467	2.19	15.8%
Gleacher Mezzanine Fund II, L.P.	2007	3,000,000	2,752,429	3,651,296	25,105	1.34	10.6%
GSO Capital Opportunities Fund LP	2007	7,500,000	11,229,550	15,937,873	122,408	1.43	17.4%
Highland Consumer Fund I LP	2007	2,000,000	2,003,212	1,136,631	493,891	0.81	-2.9%
Montreux Equity Partners IV, L.P.	2007	5,000,000	5,000,000	2,761,158	4,053,129	1.36	4.9%
New Mountain Partners III, L.P.	2007	10,000,000	10,186,606	13,560,676	6,593,085	1.98	13.3%
Olympus Capital Asia III, L.P.	2007	5,000,000	5,851,116	2,988,294	2,043,660	0.86	-3.4%
PCG Clean Energy & Technology Fund (East), LLC	2007	10,000,000	9,047,736	1,799,087	2,384,674	0.46	-10.8%
Pegasus Partners IV, L.P.	2007	7,500,000	9,065,635	5,963,628	2,431,628	0.93	-1.5%

Information provided by the New York City Fire 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%
Pine Brook Capital Partners, L.P.	2007	7,500,000	8,511,266	9,720,738	1,368,368	1.30	7.3%
Post Capital Equity Partners II LP	2007	3,000,000	2,142,326	4,013,183	477,586	2.10	15.5%
Princeton Capital Corp. (fka Capital Point)	2007	3,000,000	3,497,432	2,182,562	1,190,122	0.96	-0.8%
SCP Vitalife Partners II Fund	2007	5,000,000	5,024,924	395	2,306,549	0.46	-9.7%
Trilantic Capital Partners IV L.P.	2007	7,236,332	7,559,627	11,217,244	870,310	1.60	13.8%
United States Power Fund III, L.P.	2007	5,000,000	5,915,665	5,950,852	1,480,902	1.26	4.2%
Vista Equity Partners Fund III, L.P.	2007	7,500,000	8,037,081	18,480,896	1,869,082	2.53	27.2%
Aisling Capital III, LP	2008	3,500,000	3,949,871	6,641,293	1,817,610	2.14	24.5%
Apollo Investment Fund VII, L.P.	2008	25,000,000	30,300,254	47,509,033	4,458,024	1.72	22.9%
Ares Corporate Opportunities Fund III, L.P.	2008	10,000,000	12,063,376	17,636,084	7,184,151	2.06	20.4%
Avista Capital Partners II, L.P.	2008	10,000,000	12,960,801	20,021,237	1,849,863	1.69	15.1%
Blue Wolf Capital Fund II, L.P.	2008	3,000,000	3,252,569	3,768,005	754,542	1.39	7.8%
Bridgepoint Europe IV	2008	6,664,347	6,746,547	7,139,730	2,656,744	1.45	9.3%
Crestview Partners II, L.P.	2008	7,500,000	8,693,626	11,135,698	2,813,244	1.60	12.5%
CVC European Equity Partners V, L.P.	2008	13,680,370	14,791,218	23,413,676	4,468,414	1.89	16.2%
Euro Choice IV L.P.	2008	6,462,706	5,971,363	5,079,567	3,432,760	1.43	7.5%
First Reserve Fund XII, L.P.	2008	5,000,000	5,554,103	2,724,175	1,048,652	0.68	-8.9%
GCM Grosvenor NYCFDPF Emerging Manager Fund, L.P.	2008	8,979,798	11,224,010	9,392,380	6,059,025	1.38	9.7%
GI Partners Fund III L.P.	2008	7,500,000	8,103,000	12,597,993	145,620	1.57	13.0%
Landmark Equity Partners XIV, L.P.	2008	13,630,000	13,247,977	14,563,945	2,882,292	1.32	9.9%
Levine Leichtman Capital Partners IV, L.P.	2008	5,000,000	5,353,601	8,459,480	610,256	1.69	18.5%
Milestone Partners III, L.P.	2008	3,000,000	3,213,247	2,719,121	481,585	1.00	-0.1%
NB New York City Growth Fund IA	2008	1,208,990	1,208,990	417,624	440,544	0.71	-4.5%
New York/Fairview Emerging Managers Fund, L.P.-Tranche 2	2008	5,000,000	4,962,147	5,018,687	3,763,890	1.77	13.9%
NGN BioMed Opportunity II, L.P.	2008	5,000,000	4,787,955	3,336,553	2,625,790	1.25	3.4%
Onex Partners III LP	2008	5,000,000	5,460,617	6,865,861	2,175,689	1.66	12.6%
Paladin III (NY City), L.P.	2008	7,500,000	10,052,297	7,077,534	8,420,585	1.54	9.1%
Relativity Fund, L.P.	2008	1,631,513	1,612,064	790,446	38	0.49	-11.2%
Riverstone/Carlyle Global Energy & Power Fund IV, L.P.	2008	7,500,000	8,730,885	7,033,485	2,983,952	1.15	3.8%
Yucaipa American Alliance Fund II, LP	2008	15,000,000	20,468,035	15,901,132	17,402,390	1.63	9.4%
Yucaipa Corporate Initiatives Fund II, LP	2008	4,676,976	4,588,700	1,665,200	2,639,996	0.94	-1.0%
FS Equity Partners VI, L.P.	2009	12,500,000	12,535,176	25,878,811	8,686,871	2.76	23.2%
Lexington Capital Partners VII, L.P.	2009	10,000,000	8,840,064	10,830,573	3,066,427	1.57	14.3%
Lincolnshire Equity Fund IV, L.P.	2009	2,500,000	2,661,975	3,030,048	1,106,716	1.55	11.0%

Information provided by the New York City Fire 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%
NorthBound Emerging Manager Custom Fund LP	2009	5,000,000	4,317,619	5,586,941	1,753,257	1.70	13.7%
Scale Venture Partners III, LP	2009	5,000,000	4,947,453	10,196,535	3,151,031	2.70	22.7%
Welsh, Carson, Anderson & Stowe XI, L.P.	2009	7,500,000	7,500,000	9,705,620	2,757,236	1.66	12.8%
Comvest Investment Partners IV, L.P.	2010	20,000,000	20,052,821	30,503,383	6,348,612	1.84	30.2%
Snow Phipps II, L.P.	2010	7,500,000	8,403,820	6,328,869	4,824,106	1.33	9.0%
Trident V, L.P.	2010	15,000,000	16,874,905	16,308,710	10,742,793	1.60	11.2%
American Securities Partners VI, L.P.	2011	20,000,000	21,480,500	32,234,616	8,862,681	1.91	21.9%
Ampersand 2011	2011	5,000,000	5,000,000	5,891,410	8,083,560	2.79	22.0%
AXA Secondary Fund V B L.P.	2011	40,000,000	32,957,271	45,389,117	7,501,586	1.60	15.8%
BC European Capital IX	2011	21,928,571	23,682,986	15,676,176	17,000,636	1.38	10.1%
BDCM Opportunity Fund III, L.P.	2011	10,000,000	14,335,300	6,501,903	12,512,412	1.33	8.3%
Blackstone Capital Partners VI, L.P.	2011	10,000,000	10,265,569	7,027,699	9,099,656	1.57	13.3%
EQT VI, L.P.	2011	17,719,320	18,364,492	19,137,224	11,791,707	1.68	14.2%
Pegasus Partners V, L.P.	2011	6,236,975	7,458,200	4,515,527	8,355,406	1.73	14.8%
Vista Equity Partners Fund IV, L.P.	2011	30,000,000	30,671,980	34,645,144	25,565,620	1.96	18.5%
Wellspring Capital Partners V, L.P.	2011	7,500,000	7,557,319	8,371,337	3,396,487	1.56	15.9%
Ares Corporate Opportunities Fund IV, L.P.	2012	20,000,000	20,447,799	10,662,552	18,140,574	1.41	12.0%
Green Equity Investors VI, L.P.	2012	25,000,000	26,814,025	16,020,233	26,992,551	1.60	16.0%
<u>NYCFPF - 2012 Emerging Manager Program</u>	<u>2012</u>	<u>23,700,000</u>	<u>22,757,649</u>	<u>7,724,030</u>	<u>24,567,712</u>	<u>1.42</u>	<u>14.0%</u>
Palladium Equity Partners IV, L.P.	2012	10,000,000	8,184,790	4,599,843	7,583,504	1.49	14.1%
Platinum Equity Capital Partners III, L.P.	2012	25,000,000	20,477,068	28,945,830	9,153,208	1.86	36.9%
Summit Partners Growth Equity Fund VIII-A, L.P.	2012	30,000,000	33,797,926	43,496,921	23,657,978	1.99	26.0%
Trilantic Capital Partners V L.P.	2012	10,000,000	10,497,108	8,878,636	6,734,962	1.49	18.3%
Warburg Pincus Private Equity XI, L.P.	2012	35,000,000	37,237,928	24,443,047	33,334,111	1.55	14.0%
Apollo Investment Fund VIII, L.P.	2013	40,000,000	35,977,662	10,478,566	33,995,188	1.24	10.2%
Carlyle Partners VI, L.P.	2013	20,000,000	20,655,887	8,161,839	18,328,008	1.28	11.3%
Crestview Partners III (Co-Investment B), L.P.	2013	8,000,000	7,325,883	394,887	7,868,609	1.13	6.8%
Crestview Partners III, L.P.	2013	24,000,000	14,448,417	2,606,009	15,892,984	1.28	14.0%
Landmark - NYC Fund I, L.P.	2013	9,000,000	7,315,620	4,498,007	6,221,346	1.47	18.0%
Landmark Equity Partners XV, L.P.	2013	26,000,000	17,707,577	12,175,211	10,883,426	1.30	14.4%
ASF VI B L.P.	2014	30,000,000	21,112,662	10,516,481	19,021,667	1.40	13.3%
ASF VI B NYC Co-Invest L.P.	2014	10,000,000	7,665,687	5,859,207	4,698,170	1.38	12.8%
Carlyle Partners VI, L.P. (Side Car)	2014	2,200,000	1,567,300	91,146	1,512,800	1.02	0.8%
CVC Capital Partners VI, L.P.	2014	35,253,164	34,365,446	9,127,215	35,593,849	1.30	14.3%

Information provided by the New York City Fire Retirement System Consultants

Alternative Assets Manager Performance Detail

Through December 31, 2018



	Vintage Year					Investment	
	(Cash Flow)	Commitments	Contributions	Distributions	Market Value	Multiple	ITD IRR%
Lexington Capital Partners VIII, L.P.	2014	40,000,000	27,563,105	10,449,747	27,249,094	1.37	24.0%
Olympus Growth Fund VI, L.P.	2014	15,000,000	12,241,675	5,085,335	11,109,251	1.32	15.3%
Vista Equity Partners Fund V, L.P.	2014	40,000,000	45,928,228	35,958,696	44,001,618	1.74	22.7%
American Securities Partners VII, L.P.	2015	14,000,000	8,922,277	1,646,135	6,122,354	0.87	-9.4%
ASF VII B L.P.	2015	17,000,000	5,545,146	388,169	6,710,600	1.28	18.6%
ASF VII B NYC Co-Invest L.P.	2015	9,000,000	4,364,788	359,760	6,598,513	1.59	51.2%
Bridgepoint Europe V Co-Invest	2015	3,495,671	3,241,557	324,224	4,838,937	1.59	39.8%
Bridgepoint Europe V L.P.	2015	11,445,256	10,446,095	1,488,705	11,170,572	1.21	14.8%
Centerbridge Capital Partners III, L.P.	2015	4,200,000	2,349,059	772,613	2,130,310	1.24	11.0%
EQT VII, L.P.	2015	28,594,289	24,251,141	3,173,119	27,617,113	1.27	17.3%
<u>NYCFPF - 2015 Emerging Manager Program</u>	<u>2015</u>	<u>31,300,000</u>	<u>8,578,087</u>	<u>339,185</u>	<u>9,732,994</u>	<u>1.17</u>	<u>20.8%</u>
Siris Partners III, L.P.	2015	5,500,000	4,618,419	2,512,758	2,858,691	1.16	9.6%
Warburg Pincus Private Equity XII, L.P.	2015	36,000,000	25,340,942	1,203,228	28,422,816	1.17	12.0%
Welsh, Carson, Anderson & Stowe XII, L.P.	2015	14,000,000	9,552,662	1,949,227	12,762,578	1.54	26.8%
Apax IX USD, L.P.	2016	22,000,000	9,741,190	208,652	11,488,841	1.20	NM
Platinum Equity Capital Partners IV, L.P.	2016	19,000,000	11,989,250	2,983,773	12,781,373	1.31	NM
Vista Equity Partners Fund VI, L.P.	2016	28,000,000	25,834,725	6,914,234	25,843,654	1.27	16.8%
Ares Corporate Opportunities Fund V, L.P.	2017	17,000,000	7,187,273	292,664	6,771,072	0.98	NM
BC European Capital X	2017	16,100,167	7,947,676	-	7,486,255	0.94	NM
BCEC X Co-Investment	2017	6,487,861	3,800,427	-	3,706,387	0.98	NM
Green Equity Investors VII, L.P.	2017	17,000,000	7,814,493	67,318	8,390,259	1.08	NM
KKR Americas Fund XII, L.P.	2017	28,000,000	9,642,622	184,583	9,270,826	0.98	NM
Palladium Equity Partners V, L.P.	2017	6,666,667	-	-	(246,695)	-	N/A
Warburg Pincus Financial Sector, L.P.	2017	21,000,000	5,501,022	1,071,000	3,745,138	0.88	NM
Apollo Investment Fund IX, L.P.	2018	52,000,000	-	-	(547,179)	-	N/A
Bridgepoint Europe VI	2018	24,006,146	-	-	(209,201)	-	N/A
Bridgepoint Europe VI Co-Invest	2018	6,010,988	-	-	-	-	N/A
Crestview Partners IV (Co-Investment), L.P.	2018	4,666,667	-	-	-	-	N/A
Crestview Partners IV, L.P.	2018	14,000,000	-	-	-	-	N/A
CVC Capital Partners VII, L.P.	2018	30,846,741	4,841,052	-	5,186,560	1.07	NM
EQT VIII Co-Investment	2018	8,098,250	1,208,173	-	1,214,105	1.00	NM
EQT VIII, L.P.	2018	22,294,518	195,980	-	(76,830)	(0.39)	NM
Grain Communications Opportunity Fund II, L.P.	2018	3,500,000	696,242	-	601,884	0.86	NM
Platinum Equity Capital Partners IV Co-Investment, L.P.	2018	3,000,000	2,100,000	-	1,233,072	0.59	NM

Information provided by the New York City Fire 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%
Platinum Equity Small Cap Fund, L.P.	2018	8,000,000	390,193	-	280,182	0.72	NM
Siris Partners IV, L.P.	2018	18,000,000	-	-	(114,294)	-	N/A
Vista Equity Partners Fund VII, L.P.	2018	35,500,000	-	-	(29,474)	-	N/A
KKR European Fund V (USD)	2019	17,650,000	-	-	-	-	N/A
Lexington Capital Partners IX	2019	21,375,000	-	-	-	-	N/A
Welsh, Carson, Anderson & Stowe XIII, L.P.	2019	18,000,000	-	-	-	-	N/A

Information provided by the New York City Fire 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			994,651,520	791,341,962	549,837,846	560,341,899	1.39	8.1%
TOTAL PRIVATE REAL ESTATE								
PRISA SA	2006	Core Portfolio	7,000,000	7,530,220	2,766,502	9,887,342	1.68	4.8%
Prologis Targeted U.S. Logistics Fund	2006	Core Portfolio	5,000,000	6,745,383	2,139,267	9,148,007	1.67	5.5%
RREEF America REIT II	2006	Core Portfolio	7,000,000	9,178,399	4,708,066	10,003,348	1.60	5.2%
UBS Trumbull Property Fund	2006	Core Portfolio	27,000,000	40,871,717	26,197,035	37,007,474	1.55	7.1%
Colony Realty Partners II	2007	Core Portfolio	5,000,000	5,355,052	1,384,970	-	0.26	-13.4%
Heitman HART	2007	Core Portfolio	9,000,000	13,809,351	4,809,351	19,824,954	1.78	8.0%
JP Morgan Special Situation Property Fund	2007	Core Portfolio	5,000,000	5,870,702	2,005,592	7,219,305	1.57	4.7%
JP Morgan Strategic Property Fund	2007	Core Portfolio	22,000,000	24,459,391	-	50,384,434	2.06	8.4%
PRISA II	2007	Core Portfolio	20,228,233	21,417,377	6,565,719	30,368,493	1.72	5.9%
LaSalle Property Fund	2010	Core Portfolio	48,000,000	30,000,000	10,821,346	43,668,049	1.82	10.7%
NYC Asset Investor #2 LLC	2013	Core Portfolio	9,000,000	8,637,851	2,332,688	11,751,040	1.63	14.9%
MetLife Core Property Fund	2014	Core Portfolio	15,000,000	15,000,000	2,863,707	18,652,997	1.43	10.6%
Exeter Industrial Core Club Fund II	2016	Core Portfolio	6,000,000	3,475,517	372,031	3,909,278	1.23	14.1%
Jamestown Premier Property Fund	2016	Core Portfolio	8,000,000	9,405,930	4,047,781	7,282,478	1.20	9.8%
NYCRS Artemis Co-Investment (SEM)	2016	Core Portfolio	11,000,000	10,728,426	3,941,790	8,971,515	1.20	21.9%
USAA Eagle Real Estate Fund	2016	Core Portfolio	30,000,000	17,896,980	-	20,739,851	1.16	8.8%
Brookfield Premier Real Estate Partners	2017	Core Portfolio	19,000,000	20,297,496	1,542,343	23,584,489	1.24	12.6%
Carlyle Property Investors	2017	Core Portfolio	19,000,000	19,843,169	1,071,285	20,591,799	1.09	7.7%
Lion Industrial Trust - 2007	2017	Core Portfolio	50,000,000	17,526,232	929,064	20,371,437	1.22	14.6%
Almanac Realty Securities VIII	2019	Core Portfolio	10,500,000	26,415	-	(18,478)	N/A	N/A
Almanac Realty Securities VIII (Sidecar II)	2019	Core Portfolio	7,000,000	20,483	-	19,599	N/A	N/A
Heitman Core Real Estate Debt Income Trust	2019	Core Portfolio	8,000,000	2,883,787	52,492	2,863,455	1.01	7.1%
Blackstone Fund IV	2004	Non-Core Portfolio	5,000,000	6,406,782	8,347,173	569,192	1.39	10.1%
The City Investment Fund I	2004	Non-Core Portfolio	35,000,000	34,515,181	34,904,154	61,599	1.01	0.3%
Canyon Johnson Urban Fund II	2005	Non-Core Portfolio	10,000,000	8,988,710	3,974,652	34,109	0.45	-10.5%
Blackstone Real Estate Partners VI	2007	Non-Core Portfolio	10,000,000	11,170,327	21,167,539	986,433	1.98	13.2%
Carlyle Realty Partners V	2007	Non-Core Portfolio	5,000,000	6,319,523	7,515,137	1,346,239	1.40	8.2%
Colony Investors VIII	2007	Non-Core Portfolio	20,000,000	21,249,679	9,077,467	443,510	0.45	-11.5%
Metropolitan Workforce Housing Fund (SEM)	2007	Non-Core Portfolio	3,500,000	3,503,257	4,117,421	132,615	1.21	3.9%
AG Realty Fund VII	2008	Non-Core Portfolio	15,000,000	14,100,000	20,796,846	510,186	1.51	12.6%
American Value Partners Fund I (SEM)	2008	Non-Core Portfolio	5,000,000	3,785,294	3,413,281	464,431	1.02	0.5%
Ares European Real Estate Fund III, LP	2008	Non-Core Portfolio	15,000,000	15,243,750	16,568,750	305,221	1.11	2.6%
Silverpeak Legacy Partners III	2008	Non-Core Portfolio	5,000,000	2,216,844	402,066	426,427	0.37	-10.7%
Stockbridge Real Estate Fund III	2008	Non-Core Portfolio	13,500,000	13,499,074	8,414,877	7,339,848	1.17	2.3%
Thor Urban Property Fund II	2009	Non-Core Portfolio	5,000,000	6,849,514	6,847,656	2,130,375	1.31	7.8%

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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%
Walton Street Real Estate Fund VI	2009	Non-Core Portfolio	5,000,000	4,432,393	4,786,027	2,025,339	1.54	8.9%
Blackstone Real Estate Partners Europe III (USD Vehicle)	2010	Non-Core Portfolio	5,000,000	5,195,767	6,817,455	940,700	1.49	11.2%
Canyon Johnson Urban Fund III	2010	Non-Core Portfolio	5,000,000	4,931,163	6,664,557	5,890	1.35	11.9%
Westbrook Real Estate Fund VIII	2010	Non-Core Portfolio	5,000,000	5,957,409	6,889,968	991,944	1.32	11.6%
Carlyle Realty Partners VI	2011	Non-Core Portfolio	20,000,000	19,153,918	30,520,147	2,761,073	1.74	25.6%
H/2 Special Opportunities Fund II	2011	Non-Core Portfolio	10,000,000	10,000,001	14,233,974	1,098,134	1.53	14.4%
Blackstone Real Estate Partners VII	2012	Non-Core Portfolio	30,000,000	36,737,763	39,318,893	20,721,937	1.63	17.5%
Brookfield Strategic Real Estate Partners	2012	Non-Core Portfolio	15,000,000	16,844,194	21,520,784	12,181,197	2.00	21.9%
Divco West Fund III	2012	Non-Core Portfolio	30,000,000	29,429,127	50,063,782	729,904	1.73	23.9%
Taconic New York City Investment Fund LP	2012	Non-Core Portfolio	20,000,000	8,363,637	13,396,035	1,332,723	1.76	15.9%
NYC Asset Investor #1 LLC	2013	Non-Core Portfolio	5,000,000	5,471,907	2,163,412	4,719,702	1.26	6.7%
NYC Asset Investor #3 LLC	2013	Non-Core Portfolio	6,000,000	3,774,940	661,497	4,113,469	1.26	9.2%
Blackstone Real Estate Partners Europe IV (USD Vehicle)	2014	Non-Core Portfolio	26,000,000	25,058,142	23,415,433	14,386,066	1.51	15.9%
Carlyle Realty Partners VII	2014	Non-Core Portfolio	15,000,000	12,421,059	7,865,385	9,257,191	1.38	15.9%
Divco West Fund IV	2014	Non-Core Portfolio	30,000,000	29,700,495	42,986,084	6,024,549	1.65	26.0%
Lone Star Real Estate Fund III	2014	Non-Core Portfolio	25,000,000	23,435,387	28,407,786	3,261,631	1.35	15.0%
Avanath Affordable Housing Fund II (SEM)	2015	Non-Core Portfolio	2,220,000	2,158,370	134,679	3,160,810	1.53	13.8%
Blackstone Real Estate Partners VIII	2015	Non-Core Portfolio	31,500,000	26,194,240	8,742,039	24,742,350	1.28	16.9%
H/2 Special Opportunities Fund III	2015	Non-Core Portfolio	15,000,000	15,000,000	9,245,368	9,765,772	1.27	11.4%
European Property Investors Special Opportunities IV (EPISO IV)	2016	Non-Core Portfolio	10,059,238	7,125,644	442,785	7,680,940	1.14	10.8%
PW Real Estate Fund III LP	2016	Non-Core Portfolio	9,562,261	5,902,512	753,265	7,282,930	1.36	26.7%
Westbrook Real Estate Fund X	2016	Non-Core Portfolio	8,000,000	4,071,915	917,892	3,655,481	1.12	11.7%
Divco West Fund V	2017	Non-Core Portfolio	12,000,000	5,804,155	-	6,055,963	1.04	4.0%
DRA Growth and Income Fund IX	2017	Non-Core Portfolio	8,000,000	4,291,774	1,108,822	3,979,727	1.19	19.0%
Exeter Industrial Value Fund IV	2017	Non-Core Portfolio	10,000,000	5,500,000	-	5,933,857	1.08	11.8%
H/2 Special Opportunities Fund IV	2017	Non-Core Portfolio	19,000,000	2,666,250	-	2,526,898	0.95	-3.5%
KKR CMBS B-Piece SMA	2017	Non-Core Portfolio	25,000,000	18,522,363	1,171,700	18,414,260	1.09	1.1%
Lone Star Real Estate Fund V	2017	Non-Core Portfolio	23,100,000	3,093,742	811,248	1,881,414	0.87	-14.4%
Pramerica Real Estate Capital VI (PRECap VI)	2017	Non-Core Portfolio	10,040,161	5,084,753	2,313,533	3,675,836	1.18	20.5%
Basis Investment Group Fund I (SEM)	2018	Non-Core Portfolio	4,100,000	1,101,747	132,473	1,145,543	1.16	18.4%
KKR Real Estate Partners Americas II	2018	Non-Core Portfolio	20,070,000	5,089,382	254,775	5,117,855	1.06	13.2%
AERMONT Real Estate Fund IV	2019	Non-Core Portfolio	10,271,627	-	-	(59,906)	N/A	N/A
Brookfield Strategic Real Estate Partners III	2019	Non-Core Portfolio	30,000,000	-	-	(150,331)	N/A	N/A

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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		217,876,501	98,936,588	17,095,192	101,512,549	1.20	12.6%
TOTAL INFRASTRUCTURE INVESTMENTS							
Brookfield Infrastructure Fund II, L.P.	2013	15,000,000	12,251,930	3,104,264	14,720,755	1.45	12.5%
IFM Global Infrastructure Fund	2014	10,000,000	13,351,525	4,885,247	13,685,731	1.39	12.3%
Global Energy & Power Infrastructure Fund II	2014	10,000,000	8,452,511	4,827,457	6,943,356	1.39	37.3%
KKR Global Infrastructure Investors II L.P.	2014	12,000,000	11,651,409	1,275,291	12,381,406	1.17	10.5%
Global Infrastructure Partners III-A/B, L.P.	2016	22,000,000	15,669,232	349,205	15,429,007	1.01	0.6%
Brookfield Infrastructure Fund III, L.P.	2016	19,000,000	7,959,989	556,262	8,187,095	1.10	8.4%
Actis Energy 4	2016	12,900,000	6,736,372	993,537	6,733,000	1.15	18.6%
EQT Infrastructure III (No.2) SCSp	2017	11,310,043	7,040,705	469,013	7,942,544	NM	NM
ASF VII Infrastructure L.P.	2017	15,000,000	1,658,272	516,598	1,485,149	NM	NM
Axiom Infrastructure North America	2017	15,086,459	9,279,972	68,249	9,278,780	NM	NM
NYCRS EIG Energy Partners, L.P.	2017	15,300,000	1,632,911	50,069	1,651,934	NM	NM
NYCRS EIG Energy Partners Co-Investment, L.P.	2018	3,820,000	-	-	-	NM	NM
KKR Global Infrastructure Investors III L.P.	2018	17,200,000	1,191,760	-	1,058,588	NM	NM
Global Energy & Power Infrastructure Fund III, L.P.	2018	17,200,000	-	-	-	NM	NM
Cardinal NR Sidecar Holdings L.P.	2018	2,060,000	2,060,000	-	2,015,204	NM	NM
EQT Infrastructure IV (No.2) USD SCSp	2019	20,000,000	-	-	-	NM	NM

Information provided by the New York City Fire Retirement System Consultants

Alternative Assets Manager Performance Detail

Through March 31, 2019



	Vintage Year	Commitment - Closing (Base)	Contributions Cumulative (Local)	Distributions Cumulative	Final Market Value	3 Month Base%	Inception IRR%
TOTAL OPPORTUNISTIC FIXED INCOME		525,432,891	525,010,068	244,785,422	419,603,811	3.47%	7.22%
Avenue Special Situations Fund V, L.P.	2007	5,052,332	5,130,079	6,706,716	-		NM
Avenue Europe Special Sit. Fund, L.P.	2008	5,005,559	4,495,867	8,970,029	-		NM
PIMCO DiSCO Fund, L.P.	2008	25,000,000	25,071,292	34,076,267	-		11.23%
Torchlight Debt Opportunity Fund III, LLC	2009	15,000,000	15,991,888	23,792,157	-		13.36%
Avenue Special Situations Fund VI (A), L.P.	2011	15,000,000	15,378,545	15,272,631	1,049,798	-1.39%	1.39%
GoldenTree Managed Account	2011	32,000,000	30,000,730	-	46,939,821	5.26%	6.96%
Marathon Centre Street Partnership, L.P. - Asset Class	2011	46,875,000	61,500,000	23,625,000	61,647,923	5.10%	7.29%
AG Centre Street Partnership, L.P. - CC Asset Class	2012	35,000,000	31,850,000	9,260,636	31,082,730	0.06%	5.22%
Apollo Centre Street Partnership, L.P.	2012	50,000,000	70,402,246	36,219,516	43,751,804	2.78%	4.63%
FCO MA Centre Street L.P.	2012	30,000,000	56,627,684	33,223,447	35,897,177	1.82%	8.90%
OHA Centre Street Partnership, L.P.	2012	37,500,000	52,490,431	14,990,431	54,192,157	4.03%	7.92%
Contrarian Centre Street Partnership, L.P. - Asset Class	2013	15,000,000	15,000,000	-	15,804,994	2.69%	1.30%
Oaktree Opportunities Fund IX, L.P.	2013	30,000,000	30,000,000	12,868,629	22,035,233	5.97%	3.50%
Ares Centre Street Partnership, L.P.	2014	30,000,000	27,453,659	-	38,679,135	2.77%	10.04%
Brightwood Capital Fund III, L.P.	2015	8,000,000	6,492,299	2,387,026	5,518,655	2.12%	6.44%
Torchlight Debt Opportunity Fund V, LP	2015	20,000,000	14,000,000	2,062,811	15,570,282	1.17%	12.83%
Brightwood Capital Fund IV, LP	2016	20,000,000	10,000,000	834,053	10,407,697	2.99%	12.81%
ICG Centre Street Partnership, L.P.	2017	30,000,000	25,739,979	15,557,045	12,039,260	2.98%	9.12%
KKR OFI SMA	2017	55,000,000	19,101,528	4,939,028	16,477,662	6.23%	16.32%
Maranon Centre Street Partnership, L.P.	2018	21,000,000	8,283,841	-	8,509,482	1.70%	6.34%

Information provided by Alpha Frontier
Above data is not final and subject to change

Alternative Assets Manager Performance Detail

Through March 31, 2019



	Market Value	MTD Return%	3 Month Return%	FYTD Return%	YTD Return%	1 Year Return%	3 Year Return%	ITD Return%	ITD Cumulative Return%
TOTAL HEDGE FUNDS	810,716,111	1.63%	1.86%	0.70%	1.86%	0.96%	6.07%	3.83%	33.77%
TOTAL DIRECT HEDGE FUNDS	810,061,371	1.63%	1.86%	0.70%	1.86%	0.97%	6.26%	4.73%	40.37%
FUND OF FUNDS HEDGE FUNDS	654,740	-0.27%	1.68%	-1.38%	1.68%	-1.22%	2.92%	2.04%	16.97%
TOTAL DIRECT HEDGE FUNDS									
Caspian Select Credit Fund, L.P.	24,815,402	-0.26%	1.65%	1.36%	1.65%	1.99%	6.94%	3.77%	29.17%
D.E. Shaw Composite Fund, L.L.C.	88,116,277	0.96%	3.85%	10.00%	3.85%	10.49%	9.97%	13.08%	143.87%
Jefferies Structured Alpha Fund B, LLC	24,983,919	-0.06%		-0.06%	-0.06%			-0.06%	-0.06%
Voloridge Fund, LP	26,332,321	5.33%		5.33%	5.33%			5.33%	5.33%
Voloridge Trading Aggressive Fund, LP	14,089,878	0.64%		0.64%	0.64%			0.64%	0.64%
Relative Value	178,337,798	1.24%	3.92%	8.57%	3.92%	9.09%	9.47%	9.47%	92.71%
AlphaQuest Original LLC	47,684,315	3.95%	-6.59%	-18.91%	-6.59%	-16.01%		-2.05%	-3.73%
Brevan Howard AH Fund, L.P.	61,358,097	11.11%	1.68%	-5.54%	1.68%	23.30%		9.03%	18.02%
Florin Court Capital Fund	34,822,755	3.95%	3.37%	5.52%	3.37%			5.52%	5.52%
GSA Trend Fund LP	56,456,007	3.53%	-3.88%	-1.51%	-3.88%	-6.55%		-4.50%	-8.45%
Key Square Partners LP	63,609,379	-1.35%	5.89%	0.03%	5.89%	0.57%		0.13%	0.25%
Pharo Gaia Fund, LTD.	57,969,753	-0.29%	2.85%	8.64%	2.85%	-2.22%	13.53%	13.01%	50.34%
Pharo Macro Fund, Ltd.	51,360,158	0.53%	3.46%	4.93%	3.46%	-1.13%	10.03%	8.87%	63.00%
Tactical Trading	373,260,464	2.87%	0.91%	-1.81%	0.91%	-1.54%	3.39%	2.55%	20.27%
DL Partners Opportunities Fund LP	40,414,632	-1.73%	4.90%	2.32%	4.90%			2.32%	2.32%
Fir Tree Value Fund, L.P.	25,602,865	-1.83%	-1.80%	-8.24%	-1.80%	-8.77%	1.52%	-0.61%	-3.70%
Luxor Capital Partners Liquidating SPV, LLC.	1,070,934	8.97%	8.92%	25.69%	8.92%			25.69%	25.69%
Luxor Capital Partners, LP	50,259,922	-0.93%	-0.95%	-0.19%	-0.95%	4.70%	18.80%	2.48%	12.58%
Perry Partners L.P.	1,133,656	15.70%	15.70%	-0.31%	15.70%	-0.32%	0.13%	-2.45%	-13.48%
Standard General Fund II L.P.	16,259,386	4.56%	5.80%	2.32%	5.80%	18.29%		8.55%	19.46%
Event Driven	134,741,394	-0.52%	1.59%	-1.27%	1.59%	2.83%	11.48%	3.37%	22.67%
Altimeter Partners Fund LP	25,791,847	-2.71%	7.39%	16.74%	7.39%	20.41%	13.89%	13.43%	47.47%
Gotham Targeted Neutral, LP	12,007,912	-0.44%	-0.20%	0.31%	-0.20%	-2.88%	0.86%	-0.48%	-1.98%
SRS Partners US, LP	45,067,582	3.41%	3.70%	3.23%	3.70%	3.34%	12.10%	7.54%	36.18%
Turiya Fund LP	40,854,374	0.90%	1.79%	-1.58%	1.79%	-11.69%	-0.35%	-1.96%	-7.17%
Long/Short Equity	123,721,715	0.88%	3.41%	3.76%	3.41%	0.05%	6.26%	4.37%	27.88%
FUND OF FUNDS HEDGE FUNDS									
Fund of Funds Hedge Funds	654,740	-0.27%	1.68%	-1.38%	1.68%	-1.22%	2.92%	2.04%	16.97%

Information provided by Alpha Frontier

New York City
Fire Department Pension Fund, Subchapter Two

Appendix D

Footnotes

Through March 31, 2019



- 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 7/1/09, 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

Pages 9 - 14 - Portfolio Asset Allocation

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

Pages 15 - 17 - 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 * 32.27%*

International Developed (EAFE) Markets: MSCI World ex USA IMI Net 8.26%*

*International Active – Global: MSCI ACWI * 1.48%*

*Emerging Markets: MSCI Emerging Markets * 5.86%*

*International Emerging Managers FOF: MSCI ACWI Ex US IMI Net * 0.51%*

*REITs: Dow Jones Real Estate Securities * 0.00%*

*Private Equity: Russell 3000 + 300 b.p. per annum * 7.00%*

*Private Real Estate – Core: NFI - ODCE Net * 2.94%*

*Private Real Estate – Non Core: NFI - ODCE Net + 200bps * 1.64%*

*Infrastructure: CPI + 4% * 0.91%*

*Hedge Funds: HFRI Fund of Funds Composite Index plus 1% *6.00%*

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

*US Treasury Intermediate: FTSE USBIG Treasury/Agency 1-10Y * 0.00%*

*Active Government: NYC Treasury Agency + 5 * 0.00%*

*US Treasury Long Duration: FTSE Treasury 10+ * 8.55%*

*Core FI-Developing Mgrs: BBG Barc Agg * 0.00%*

*Core FI-Emerging Mgrs: BBG Barc Agg * 0.00%*

*Mortgage: FTSE Mortgage Index * 2.84%*

*ETI: ETI Custom Benchmark * 0.75%*

Glossary of Terms

Through March 31, 2019



*Investment Grade Credit: NYC – Investment Grade Credit * 3.59%*

*High Yield: Bloomberg Barclays US High Yield 2% Issuer Capped * 7.88%*

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

*TIPS: BBG BARC Gbl Inf-Lk: US TIPS * 4.27%*

*Convertible Bonds: BofAML All Convertibles Ex Mandatory * 0.00%*

*Opportunistic Fixed: OFI - JPMGHY / CSFB 50/50 Blend Plus 300 b.p. per annum * 3.24%*

Page 18 – 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.