

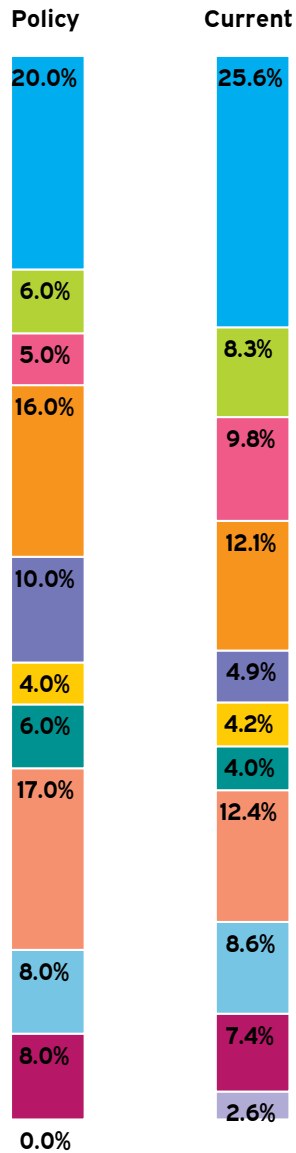
Massachusetts Housing Finance Agency Retirement System

November 12, 2024

2024 Q3 Review

Third Quarter 2024 Performance Review

Asset Allocation Compliance | As of September 30, 2024



	Balance (\$)	Current Allocation (%)	Policy (%)	Difference (%)	Policy Range (%)	Within IPS Range?
US Equity	66,805,624	26	20	6	15 - 25	No
Developed Market Equity	21,668,016	8	6	2	2 - 10	Yes
Emerging Market Equity	25,639,800	10	5	5	0 - 15	Yes
Investment Grade Bonds	31,671,946	12	16	-4	11 - 21	Yes
TIPS	12,867,399	5	10	-5	5 - 15	No
Emerging Market Bonds	11,007,392	4	4	0	1 - 7	Yes
High Yield Bonds	10,511,346	4	6	-2	3 - 9	Yes
Private Equity	32,309,425	12	17	-5	12 - 22	Yes
Real Estate	22,450,487	9	8	1	5 - 11	Yes
Infrastructure	19,297,945	7	8	-1	5 - 12	Yes
Cash	6,791,368	3	0	3	0 - 5	Yes
Total	261,020,748	100	100	0		

Asset Class Performance Summary										
	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Retirement System	261,020,748	100.0	3.7	8.6	15.4	4.9	9.1	7.3	6.3	Jul-01
<i>60% MSCI ACWI / 40% Barclays Global Aggregate</i>			6.8	12.5	23.6	3.6	7.0	6.0	6.1	
<i>InvMetrics Public DB \$50mm-\$250mm Net (USD) Median</i>			5.3	11.9	21.0	4.5	8.4	7.5	6.2	
Total Retirement System Rank			96	94	94	40	26	56	44	
Domestic Equity Assets	66,805,624	25.6	6.4	19.8	34.2	9.9	15.1	12.7	8.8	Jul-01
<i>Russell 3000 Index</i>			6.2	20.6	35.2	10.3	15.3	12.8	9.0	
<i>eV US Large Cap Equity Median</i>			5.9	18.7	31.8	9.8	13.8	11.7	8.9	
Domestic Equity Assets Rank			44	41	40	49	35	35	55	
Total International Developed Market Equity	21,668,016	8.3	8.0	12.7	24.5	3.8	7.8	5.9	6.3	Jul-01
<i>MSCI EAFE (Net)</i>			7.3	13.0	24.8	5.5	8.2	5.7	5.6	
<i>eV EAFE Core Equity Median</i>			7.6	12.8	24.3	4.3	8.2	6.0	6.4	
Total International Developed Market Equity Rank			45	52	46	60	60	56	54	
International Emerging Market Equity Assets	25,639,800	9.8	-0.7	14.9	28.0	5.6	9.6	4.5	3.0	Jul-07
<i>MSCI Emerging Markets (Net)</i>			8.7	16.9	26.1	0.4	5.7	4.0	3.0	
<i>eV Emg Mkts Equity Median</i>			7.0	15.0	24.1	1.2	6.5	4.6	3.4	
International Emerging Market Equity Assets Rank			99	51	21	17	20	51	67	
Investment Grade Bond Assets	31,671,946	12.1	5.3	5.3	12.7	-0.7	1.3	2.4	4.0	Jul-01
<i>Blmbg. U.S. Aggregate Index</i>			5.2	4.4	11.6	-1.4	0.3	1.8	3.7	
<i>eV US Core Fixed Inc Median</i>			5.2	4.8	11.9	-1.2	0.7	2.1	4.0	
Investment Grade Bond Assets Rank			20	14	13	14	9	12	53	

Asset Allocation & Performance | As of September 30, 2024

	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
High Yield Bond Assets	10,511,346	4.0	5.1	8.5	16.4	2.1	4.6	4.9	5.9	Feb-05
<i>Credit Suisse High Yield Index</i>			4.7	7.6	14.9	3.2	4.5	4.8	6.3	
<i>eV US High Yield Fixed Inc Median</i>			4.4	7.3	14.3	3.1	4.4	4.6	5.9	
High Yield Bond Assets Rank			16	13	6	87	39	25	52	
TIPS Assets	12,867,399	4.9	4.1	5.0	9.8	-0.6	2.6	2.5	3.7	Jul-07
<i>Blmbg. U.S. TIPS Index</i>			4.1	4.9	9.8	-0.6	2.6	2.5	3.7	
<i>eV US TIPS / Inflation Fixed Inc Median</i>			4.0	4.9	9.6	-0.4	2.6	2.5	3.6	
TIPS Assets Rank			41	40	33	57	55	53	31	
Emerging Market Debt Assets	11,007,392	4.2	6.2	8.4	18.9	0.8	1.8	0.9	-0.5	Mar-13
<i>50% JPM EMBI GD / 50% JPM GBI-EM</i>			7.6	6.8	16.0	0.1	0.8	2.0	1.4	
Real Estate Assets	22,450,487	8.6	-0.6	-1.9	-5.1	0.5	2.9	6.3	5.3	Apr-05
<i>NCREIF ODCE (Net)</i>			0.0	-3.2	-8.0	-1.0	2.1	5.2	5.4	
Private Equity Assets	32,309,425	12.4	-0.1	-1.1	-0.4	6.3	16.7	12.8	8.5	Oct-03
<i>Preqin Private Equity 1Q Lagged</i>			1.4	4.7	6.1	6.4	15.0	13.8	13.2	
Infrastructure Assets	19,297,945	7.4	3.8	3.7	6.4	8.0	9.1	--	9.6	Oct-18
<i>CPI +3% (Unadjusted)</i>			1.1	5.1	5.5	7.9	7.3	5.9	6.9	
Cash	6,791,368	2.6								

Trailing Net Performance										
	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total Retirement System	261,020,748	100.0	3.7	8.6	15.4	4.9	9.1	7.3	6.3	Jul-01
<i>60% MSCI ACWI / 40% Barclays Global Aggregate</i>			6.8	12.5	23.6	3.6	7.0	6.0	6.1	
<i>InvMetrics Public DB \$50mm-\$250mm Net (USD) Median</i>			5.3	11.9	21.0	4.5	8.4	7.5	6.2	
Total Retirement System Rank			96	94	94	40	26	56	44	
Domestic Equity Assets	66,805,624	25.6	6.4	19.8	34.2	9.9	15.1	12.7	8.8	Jul-01
<i>Russell 3000 Index</i>			6.2	20.6	35.2	10.3	15.3	12.8	9.0	
<i>eV US Large Cap Equity Median</i>			5.9	18.7	31.8	9.8	13.8	11.7	8.9	
Domestic Equity Assets Rank			44	41	40	49	35	35	55	
SSgA Russell 1000 Value Index-NL	29,749,544	11.4	9.5	16.7	27.8	9.0	10.6	9.2	8.0	Jan-05
<i>Russell 1000 Value Index</i>			9.4	16.7	27.8	9.0	10.7	9.2	8.1	
<i>eV US Large Cap Value Equity Median</i>			7.9	16.1	27.6	9.8	11.7	9.7	8.5	
SSgA Russell 1000 Value Index-NL Rank			23	43	49	65	71	66	70	
SSgA Russell 1000 Growth-NL	31,578,158	12.1	3.2	24.5	42.2	12.0	19.7	16.4	12.7	Jul-07
<i>Russell 1000 Growth Index</i>			3.2	24.6	42.2	12.0	19.7	16.5	12.8	
<i>eV US Large Cap Growth Equity Median</i>			3.2	22.8	39.8	8.8	16.7	14.5	11.4	
SSgA Russell 1000 Growth-NL Rank			51	34	36	17	11	7	10	
SSgA Russell 2000 Index-NL	5,477,922	2.1	9.3	11.1	26.7	1.9	9.4	8.8	10.6	Aug-10
<i>Russell 2000 Index</i>			9.3	11.2	26.8	1.8	9.4	8.8	10.6	
<i>eV US Small Cap Core Equity Median</i>			8.5	11.6	25.2	4.9	11.1	9.5	11.6	
SSgA Russell 2000 Index-NL Rank			39	55	36	80	77	73	77	

Asset Allocation & Performance | As of September 30, 2024

	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Total International Developed Market Equity	21,668,016	8.3	8.0	12.7	24.5	3.8	7.8	5.9	6.3	Jul-01
<i>MSCI EAFE (Net)</i>			7.3	13.0	24.8	5.5	8.2	5.7	5.6	
<i>eV EAFE Core Equity Median</i>			7.6	12.8	24.3	4.3	8.2	6.0	6.4	
Total International Developed Market Equity Rank			45	52	46	60	60	56	54	
SSgA MSCI EAFE Index-NL	16,725,289	6.4	7.2	13.2	24.9	5.7	8.4	6.0	6.8	Aug-10
<i>MSCI EAFE (Net)</i>			7.3	13.0	24.8	5.5	8.2	5.7	6.6	
<i>eV EAFE Core Equity Median</i>			7.6	12.8	24.3	4.3	8.2	6.0	7.1	
SSgA MSCI EAFE Index-NL Rank			59	46	42	27	44	55	71	
SSgA MSCI EAFE Small Cap Index-NL	4,942,727	1.9	10.5	11.1	23.3	-0.2	6.4	6.2	7.6	Aug-10
<i>MSCI EAFE Small Cap (Net)</i>			10.5	11.1	23.5	-0.4	6.4	6.2	7.5	
<i>eV EAFE Small Cap Core Median</i>			9.8	11.9	24.2	-0.3	7.4	6.7	8.3	
SSgA MSCI EAFE Small Cap Index-NL Rank			35	55	54	50	66	64	62	
International Emerging Market Equity Assets	25,639,800	9.8	-0.7	14.9	28.0	5.6	9.6	4.5	3.0	Jul-07
<i>MSCI Emerging Markets (Net)</i>			8.7	16.9	26.1	0.4	5.7	4.0	3.0	
<i>eV Emg Mkts Equity Median</i>			7.0	15.0	24.1	1.2	6.5	4.6	3.4	
International Emerging Market Equity Assets Rank			99	51	21	17	20	51	67	
GQG Partners Emerging Markets	25,639,800	9.8	-0.7	14.9	28.0	5.6	10.6	--	10.2	Apr-19
<i>MSCI Emerging Markets (Net)</i>			8.7	16.9	26.1	0.4	5.7	4.0	4.5	
<i>eV Emg Mkts Equity Median</i>			7.0	15.0	24.1	1.2	6.5	4.6	5.4	
GQG Partners Emerging Markets Rank			99	51	21	17	15	--	10	

Asset Allocation & Performance | As of September 30, 2024

	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Investment Grade Bond Assets	31,671,946	12.1	5.3	5.3	12.7	-0.7	1.3	2.4	4.0	Jul-01
<i>Blmbg. U.S. Aggregate Index</i>			5.2	4.4	11.6	-1.4	0.3	1.8	3.7	
<i>eV US Core Fixed Inc Median</i>			5.2	4.8	11.9	-1.2	0.7	2.1	4.0	
Investment Grade Bond Assets Rank			20	14	13	14	9	12	53	
Longfellow Investment Grade Bond	31,671,946	12.1	5.3	5.3	12.7	-0.7	1.3	--	2.1	Sep-17
<i>Blmbg. U.S. Aggregate Index</i>			5.2	4.4	11.6	-1.4	0.3	1.8	1.4	
<i>eV US Core Fixed Inc Median</i>			5.2	4.8	11.9	-1.2	0.7	2.1	1.7	
Longfellow Investment Grade Bond Rank			20	14	13	14	9	--	7	
High Yield Bond Assets	10,511,346	4.0	5.1	8.5	16.4	2.1	4.6	4.9	5.9	Feb-05
<i>Credit Suisse High Yield Index</i>			4.7	7.6	14.9	3.2	4.5	4.8	6.3	
<i>eV US High Yield Fixed Inc Median</i>			4.4	7.3	14.3	3.1	4.4	4.6	5.9	
High Yield Bond Assets Rank			16	13	6	87	39	25	52	
Lord Abbett High Yield Core	10,511,346	4.0	5.1	8.5	16.4	2.2	4.6	--	4.6	Jul-19
<i>Blmbg. U.S. Corp: High Yield Index</i>			5.3	8.0	15.7	3.1	4.7	5.0	4.7	
<i>eV US High Yield Fixed Inc Median</i>			4.4	7.3	14.3	3.1	4.4	4.6	4.4	
Lord Abbett High Yield Core Rank			16	13	6	87	39	--	43	

Asset Allocation & Performance | As of September 30, 2024

	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
TIPS Assets	12,867,399	4.9	4.1	5.0	9.8	-0.6	2.6	2.5	3.7	Jul-07
<i>Blmbg. U.S. TIPS Index</i>			4.1	4.9	9.8	-0.6	2.6	2.5	3.7	
<i>eV US TIPS / Inflation Fixed Inc Median</i>			4.0	4.9	9.6	-0.4	2.6	2.5	3.6	
TIPS Assets Rank			41	40	33	57	55	53	31	
SSgA TIPS-NL	12,867,399	4.9	4.1	5.0	9.8	-0.6	2.6	2.5	3.7	Jul-07
<i>Blmbg. U.S. TIPS Index</i>			4.1	4.9	9.8	-0.6	2.6	2.5	3.7	
<i>eV US TIPS / Inflation Fixed Inc Median</i>			4.0	4.9	9.6	-0.4	2.6	2.5	3.6	
SSgA TIPS-NL Rank			41	40	33	57	56	55	34	
Emerging Market Debt Assets	11,007,392	4.2	6.2	8.4	18.9	0.8	1.8	0.9	-0.5	Mar-13
<i>50% JPM EMBI GD / 50% JPM GBI-EM</i>			7.6	6.8	16.0	0.1	0.8	2.0	1.4	
Metlife Emerging Markets Debt	4,595,655	1.8	6.5	7.3	15.9	1.0	2.3	--	3.2	Nov-16
<i>MetLife Custom Benchmark</i>			6.4	7.3	15.4	0.6	1.6	2.7	2.7	
Aberdeen Emerging Markets Bond Fund	6,411,737	2.5	6.0	9.2	21.1	0.6	1.4	--	2.9	Dec-16
<i>JPM EMBI Global Diversified</i>			6.2	8.6	18.6	-0.4	0.9	3.3	3.0	
Real Estate Assets	22,450,487	8.6	-0.6	-1.9	-5.1	0.5	2.9	6.3	5.3	Apr-05
<i>NCREIF ODCE (Net)</i>			0.0	-3.2	-8.0	-1.0	2.1	5.2	5.4	
Intercontinental U.S. REIF	8,999,610	3.4	-1.2	-5.4	-10.9	-3.1	1.2	5.4	5.4	Oct-14
<i>NCREIF ODCE (Net)</i>			0.0	-3.2	-8.0	-1.0	2.1	5.2	5.2	
AEW Core Property Trust	9,281,007	3.6	-0.6	-1.8	-3.8	1.1	3.0	5.6	5.6	Oct-14
<i>NCREIF ODCE (Net)</i>			0.0	-3.2	-8.0	-1.0	2.1	5.2	5.2	
AEW Partners IX, L.P.	4,169,870	1.6	0.5	6.3	6.9	5.5	--	--	-3.3	Apr-21
<i>NCREIF ODCE (Net)</i>			0.0	-3.2	-8.0	-1.0	2.1	5.2	1.9	

AEW Core Property Trust market value is preliminary as of 9/30/2024.

Asset Allocation & Performance | As of September 30, 2024

	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Private Equity Assets	32,309,425	12.4	-0.1	-1.1	-0.4	6.3	16.7	12.8	8.5	Oct-03
<i>Preqin Private Equity 1Q Lagged</i>			<i>1.4</i>	<i>4.7</i>	<i>6.1</i>	<i>6.4</i>	<i>15.0</i>	<i>13.8</i>	<i>13.2</i>	
Ascent Venture Partners - Fund V	625,326	0.2								
Ascent Venture Partners - Fund VI	1,253,719	0.5								
Constitution Capital Partners Ironsides III	34,042	0.0								
Constitution Capital Partners Ironsides IV	3,180,629	1.2								
Constitution Capital Partners Ironsides V	3,059,846	1.2								
Constitution Capital Direct IV	1,000,918	0.4								
Constitution Capital Direct V	3,976,809	1.5								
Constitution Capital Co-Investment Fund VI, L.P.	4,299,897	1.6								
Goldman Sachs PEP 2005	103,575	0.0								
HarbourVest Partners VIII	23,230	0.0								
HarbourVest Partners IX	2,188,237	0.8								
HarbourVest X Buyout Fund	5,482,215	2.1								
HarbourVest Partners XI	5,444,168	2.1								
HarbourVest Fund XII	1,636,812	0.6								

Private Equity Asset market values are as of 6/30/2024 adjusted for subsequent cash flows.

Asset Allocation & Performance | As of September 30, 2024

	Market Value \$	% of Portfolio	QTD (%)	YTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	10 Yrs (%)	Inception (%)	Inception Date
Infrastructure Assets	19,297,945	7.4	3.8	3.7	6.4	8.0	9.1	--	9.6	Oct-18
<i>CPI +3% (Unadjusted)</i>			<i>1.1</i>	<i>5.1</i>	<i>5.5</i>	<i>7.9</i>	<i>7.3</i>	<i>5.9</i>	<i>6.9</i>	
IFM Global Infrastructure (U.S.), L.P.	19,297,945	7.4	3.8	3.7	6.4	8.0	9.1	--	9.6	Oct-18
<i>CPI +3% (Unadjusted)</i>			<i>1.1</i>	<i>5.1</i>	<i>5.5</i>	<i>7.9</i>	<i>7.3</i>	<i>5.9</i>	<i>6.9</i>	
Cash	6,791,368	2.6								
Cash STIF	6,791,368	2.6								

Calendar Year Performance									
	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)
Total Retirement System	11.2	-8.6	16.2	14.1	17.4	-3.2	14.3	9.6	-2.7
<i>60% MSCI ACWI / 40% Barclays Global Aggregate</i>	<i>15.4</i>	<i>-17.3</i>	<i>8.8</i>	<i>14.0</i>	<i>18.6</i>	<i>-6.0</i>	<i>17.1</i>	<i>5.7</i>	<i>-2.5</i>
Domestic Equity Assets	24.3	-18.2	25.2	21.5	30.8	-5.6	20.9	13.0	0.4
<i>Russell 3000 Index</i>	<i>26.0</i>	<i>-19.2</i>	<i>25.7</i>	<i>20.9</i>	<i>31.0</i>	<i>-5.2</i>	<i>21.1</i>	<i>12.7</i>	<i>0.5</i>
SSgA Russell 1000 Value Index-NL	11.4	-7.6	25.1	2.8	26.5	-8.3	13.7	17.2	-3.8
<i>Russell 1000 Value Index</i>	<i>11.5</i>	<i>-7.5</i>	<i>25.2</i>	<i>2.8</i>	<i>26.5</i>	<i>-8.3</i>	<i>13.7</i>	<i>17.3</i>	<i>-3.8</i>
SSgA Russell 1000 Growth-NL	42.7	-29.2	27.5	38.4	36.3	-1.8	30.1	7.1	5.5
<i>Russell 1000 Growth Index</i>	<i>42.7</i>	<i>-29.1</i>	<i>27.6</i>	<i>38.5</i>	<i>36.4</i>	<i>-1.5</i>	<i>30.2</i>	<i>7.1</i>	<i>5.7</i>
SSgA Russell 2000 Index-NL	17.0	-20.3	14.9	19.9	25.5	-11.0	14.6	21.4	-4.5
<i>Russell 2000 Index</i>	<i>16.9</i>	<i>-20.4</i>	<i>14.8</i>	<i>20.0</i>	<i>25.5</i>	<i>-11.0</i>	<i>14.6</i>	<i>21.3</i>	<i>-4.4</i>
Total International Developed Market Equity	16.6	-16.4	10.9	9.2	23.1	-14.8	27.3	1.6	2.0
<i>MSCI EAFE (Net)</i>	<i>18.2</i>	<i>-14.5</i>	<i>11.3</i>	<i>7.8</i>	<i>22.0</i>	<i>-13.8</i>	<i>25.0</i>	<i>1.0</i>	<i>-0.8</i>
SSgA MSCI EAFE Index-NL	18.5	-14.2	11.4	8.2	22.4	-13.6	25.4	1.3	-0.6
<i>MSCI EAFE (Net)</i>	<i>18.2</i>	<i>-14.5</i>	<i>11.3</i>	<i>7.8</i>	<i>22.0</i>	<i>-13.8</i>	<i>25.0</i>	<i>1.0</i>	<i>-0.8</i>
SSgA MSCI EAFE Small Cap Index-NL	13.4	-21.1	9.9	12.2	24.7	-17.8	33.0	2.2	9.4
<i>MSCI EAFE Small Cap (Net)</i>	<i>13.2</i>	<i>-21.4</i>	<i>10.1</i>	<i>12.3</i>	<i>25.0</i>	<i>-17.9</i>	<i>33.0</i>	<i>2.2</i>	<i>9.6</i>
International Emerging Market Equity Assets	30.3	-21.2	-1.5	24.6	15.8	-17.9	31.8	11.7	-17.9
<i>MSCI Emerging Markets (Net)</i>	<i>9.8</i>	<i>-20.1</i>	<i>-2.5</i>	<i>18.3</i>	<i>18.4</i>	<i>-14.6</i>	<i>37.3</i>	<i>11.2</i>	<i>-14.9</i>
GQG Partners Emerging Markets	30.3	-21.2	-1.5	33.9	--	--	--	--	--
<i>MSCI Emerging Markets (Net)</i>	<i>9.8</i>	<i>-20.1</i>	<i>-2.5</i>	<i>18.3</i>	<i>18.4</i>	<i>-14.6</i>	<i>37.3</i>	<i>11.2</i>	<i>-14.9</i>

Asset Allocation & Performance | As of September 30, 2024

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)
Investment Grade Bond Assets	6.8	-13.1	-0.2	9.2	8.9	-0.1	3.5	2.7	0.8
<i>Blmbg. U.S. Aggregate Index</i>	<i>5.5</i>	<i>-13.0</i>	<i>-1.5</i>	<i>7.5</i>	<i>8.7</i>	<i>0.0</i>	<i>3.5</i>	<i>2.6</i>	<i>0.5</i>
Longfellow Investment Grade Bond	6.8	-13.1	-0.2	9.2	8.9	-0.1	--	--	--
<i>Blmbg. U.S. Aggregate Index</i>	<i>5.5</i>	<i>-13.0</i>	<i>-1.5</i>	<i>7.5</i>	<i>8.7</i>	<i>0.0</i>	<i>3.5</i>	<i>2.6</i>	<i>0.5</i>
High Yield Bond Assets	12.1	-13.0	5.8	8.6	15.5	-3.7	6.8	11.5	-0.2
<i>Credit Suisse High Yield Index</i>	<i>13.6</i>	<i>-10.6</i>	<i>5.5</i>	<i>5.5</i>	<i>14.0</i>	<i>-2.4</i>	<i>7.0</i>	<i>18.3</i>	<i>-4.9</i>
Lord Abbett High Yield Core	12.1	-12.9	5.8	8.6	--	--	--	--	--
<i>Blmbg. U.S. Corp: High Yield Index</i>	<i>13.4</i>	<i>-11.2</i>	<i>5.3</i>	<i>7.1</i>	<i>14.3</i>	<i>-2.1</i>	<i>7.5</i>	<i>17.1</i>	<i>-4.5</i>
TIPS Assets	3.9	-12.0	5.9	10.9	8.4	-1.3	3.0	4.6	-1.4
<i>Blmbg. U.S. TIPS Index</i>	<i>3.9</i>	<i>-11.8</i>	<i>6.0</i>	<i>11.0</i>	<i>8.4</i>	<i>-1.3</i>	<i>3.0</i>	<i>4.7</i>	<i>-1.4</i>
SSgA TIPS-NL	3.9	-12.0	5.9	10.9	8.4	-1.3	2.9	4.4	-1.4
<i>Blmbg. U.S. TIPS Index</i>	<i>3.9</i>	<i>-11.8</i>	<i>6.0</i>	<i>11.0</i>	<i>8.4</i>	<i>-1.3</i>	<i>3.0</i>	<i>4.7</i>	<i>-1.4</i>
Emerging Market Debt Assets	13.3	-15.3	-4.0	5.5	14.9	-7.1	13.1	10.0	-15.2
<i>50% JPM EMBI GD / 50% JPM GBI-EM</i>	<i>11.9</i>	<i>-14.8</i>	<i>-5.3</i>	<i>4.0</i>	<i>14.3</i>	<i>-5.2</i>	<i>12.7</i>	<i>10.2</i>	<i>-7.1</i>
Metlife Emerging Markets Debt	12.6	-13.3	-3.7	6.1	14.5	-6.6	13.4	--	--
<i>MetLife Custom Benchmark</i>	<i>10.7</i>	<i>-13.5</i>	<i>-2.9</i>	<i>5.4</i>	<i>13.7</i>	<i>-4.0</i>	<i>10.6</i>	<i>10.0</i>	<i>-3.8</i>
Aberdeen Emerging Markets Bond Fund	13.8	-16.6	-4.0	5.0	15.3	-7.5	12.7	--	--
<i>JPM EMBI Global Diversified</i>	<i>11.1</i>	<i>-17.8</i>	<i>-1.8</i>	<i>5.3</i>	<i>15.0</i>	<i>-4.3</i>	<i>10.3</i>	<i>10.2</i>	<i>1.2</i>

Asset Allocation & Performance | As of September 30, 2024

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)
Real Estate Assets	-10.6	7.8	19.4	0.5	8.1	8.3	8.4	9.0	13.8
<i>NCREIF ODCE (Net)</i>	<i>-12.7</i>	<i>6.5</i>	<i>21.0</i>	<i>0.3</i>	<i>4.4</i>	<i>7.4</i>	<i>6.7</i>	<i>7.8</i>	<i>14.0</i>
Intercontinental U.S. REIF	-16.0	7.4	20.0	1.0	8.2	9.3	7.5	10.9	12.7
<i>NCREIF ODCE (Net)</i>	<i>-12.7</i>	<i>6.5</i>	<i>21.0</i>	<i>0.3</i>	<i>4.4</i>	<i>7.4</i>	<i>6.7</i>	<i>7.8</i>	<i>14.0</i>
AEW Core Property Trust	-10.3	7.8	20.8	0.3	5.1	6.6	6.6	7.6	12.8
<i>NCREIF ODCE (Net)</i>	<i>-12.7</i>	<i>6.5</i>	<i>21.0</i>	<i>0.3</i>	<i>4.4</i>	<i>7.4</i>	<i>6.7</i>	<i>7.8</i>	<i>14.0</i>
AEW Partners IX, L.P.	6.5	5.6	--	--	--	--	--	--	--
<i>NCREIF ODCE (Net)</i>	<i>-12.7</i>	<i>6.5</i>	<i>21.0</i>	<i>0.3</i>	<i>4.4</i>	<i>7.4</i>	<i>6.7</i>	<i>7.8</i>	<i>14.0</i>
Private Equity Assets	3.3	11.1	46.1	25.3	15.7	13.7	11.8	6.3	0.8
<i>Preqin Private Equity 1Q Lagged</i>	<i>7.9</i>	<i>2.9</i>	<i>44.7</i>	<i>17.0</i>	<i>10.2</i>	<i>15.7</i>	<i>18.0</i>	<i>10.2</i>	<i>10.9</i>
Ascent Venture Partners - Fund V									
Ascent Venture Partners - Fund VI									
Constitution Capital Partners Ironsides III									
Constitution Capital Partners Ironsides IV									
Constitution Capital Partners Ironsides V									
Constitution Capital Direct IV									
Constitution Capital Direct V									
Constitution Capital Co-Investment Fund VI, L.P.									
Goldman Sachs PEP 2005									
HarbourVest Partners VIII									

Asset Allocation & Performance | As of September 30, 2024

	2023 (%)	2022 (%)	2021 (%)	2020 (%)	2019 (%)	2018 (%)	2017 (%)	2016 (%)	2015 (%)
HarbourVest Partners IX									
HarbourVest X Buyout Fund									
HarbourVest Partners XI									
HarbourVest Fund XII									
Infrastructure Assets	8.4	8.2	17.4	3.1	14.6	--	--	--	--
<i>CPI +3% (Unadjusted)</i>	<i>6.4</i>	<i>9.6</i>	<i>10.2</i>	<i>4.4</i>	<i>5.3</i>	<i>5.0</i>	<i>5.2</i>	<i>5.1</i>	<i>3.7</i>
IFM Global Infrastructure (U.S.), L.P.	8.4	8.2	17.4	3.1	14.6	--	--	--	--
<i>CPI +3% (Unadjusted)</i>	<i>6.4</i>	<i>9.6</i>	<i>10.2</i>	<i>4.4</i>	<i>5.3</i>	<i>5.0</i>	<i>5.2</i>	<i>5.1</i>	<i>3.7</i>
Cash									
Cash STIF									

Benchmark History

From Date	To Date	Benchmark
Metlife Emerging Markets Debt		
02/01/2002	Present	30.0% JPM GBI-EM Global Diversified, 35.0% JPM CEMBI Broad Diversified Index, 35.0% JPM EMBI Global Index (USD)

Risk Return Statistics		
	3 Yrs (%)	5 Yrs (%)
	Total Retirement System	Total Retirement System
RETURN SUMMARY STATISTICS		
Maximum Return	4.6	5.7
Minimum Return	-4.4	-6.5
Return	4.9	9.1
Excess Return	1.6	6.8
Excess Performance	1.2	2.0
RISK SUMMARY STATISTICS		
Beta	0.6	0.6
Upside Risk	6.4	7.3
Downside Risk	5.2	5.2
RISK/RETURN SUMMARY STATISTICS		
Standard Deviation	8.1	8.5
Sortino Ratio	0.3	1.2
Alpha	2.4	4.3
Sharpe Ratio	0.2	0.8
Excess Risk	8.0	8.6
Tracking Error	5.5	5.2
Information Ratio	0.1	0.3
CORRELATION STATISTICS		
R-Squared	0.9	0.9
Actual Correlation	1.0	0.9

Closed End Funds Overview

Fund	Vintage Year	Committed (\$mm)	Called (\$mm)	Distributed (\$mm)	Fair Value (\$mm)	Net IRR ¹ (%)
AEW Partners IX, L.P.	2019	5.0	4.0	0.2	4.4	7.0
Ascent Venture Partners – Fund V	2011	1.0	1.0	0.9	0.6	6.0
Ascent Venture Partners – Fund VI	2015	1.5	1.5	0.0	1.5	-0.1
Constitution Capital Partnership Ironsides III	2014	5.0	6.7	13.4	0.0	23.4
Constitution Capital Partnership Ironsides IV	2016	3.3	3.4	3.7	3.2	26.1
Constitution Capital Partnership Ironsides V	2020	2.5	2.3	0.3	3.1	18.9
Constitution Capital Direct IV	2016	3.3	3.9	5.5	1.0	14.5
Constitution Capital Direct V	2019	2.5	3.0	1.3	4.0	15.7
Constitution Capital Co-Investment Fund VI, L.P.	2021	4.0	3.7	0.3	4.3	8.5
Goldman Sachs PEP 2005	2006	2.3	2.4	3.0	0.1	4.4
HarbourVest Partners VIII	2006	2.5	2.4	4.4	0.0	10.6
HarbourVest Partners IX	2010	5.0	4.4	7.3	2.3	17.4
HarbourVest X Buyout Fund	2016	6.5	5.6	4.6	5.5	20.0
HarbourVest Partners XI	2019	5.0	4.2	1.2	5.3	20.9
HarbourVest Fund XII	2019	4.0	1.3	0.0	1.5	14.2

¹ As of June 30, 2024.

Appendices

Corporate Update



7
Offices



240+
Employees



250+
Clients



\$2T
Assets Under Advisement



\$340B
Assets in Alternative Investments



98%
Client Retention Rate



5:1
Client | Consultant Ratio

UPCOMING EVENTS



Q3 Investment Perspectives Webcast
October 2024



Evolving Asia: Japan, India and EM Ex-China
December 2024

Meketa Investment Group is proud to work for over 25 million American families everyday!

Client and employee counts as of September 30, 2024; assets under advisement as of June 30, 2024; assets in alternative investments as of December 31, 2023. Client retention rate is one minus the number of clients lost divided by the number of clients at prior year-end. Average over the previous five years.

THOUGHT LEADERSHIP



The art of patient investing

In recent years, large cap US stocks and private equity have dramatically outperformed most asset classes. Almost every other asset class in a diversified portfolio has served as a drag on portfolio returns. This is testing many investors' patience with diversification.

This research note is intended to remind investors of the benefits of taking a patient approach to investing. The first half focuses on the long-term case for a diversified portfolio. The second half explores various areas where investors may want to remain patient in the current market.

Read more here:

<https://meketa.com/leadership/the-art-of-patient-investing/>



The decreasing number of public companies

In this note, we examine the drivers behind the decline in the number of publicly traded stocks.

Our analysis reviews IPOs and delistings, regulatory burdens, the growth and availability of private capital, and the role of mergers and acquisitions. We also consider factors like the rise of propriety technology and intellectual property. Finally, we explore the implications of this change for institutional investors.

Read more here:

<https://meketa.com/leadership/the-decreasing-number-of-public-companies/>



Can governments really pay for everything they promise?

This paper examines the current rise in debt levels, higher interest rates, and inflationary pressures in some sectors of the economy in the context of MMT.

It considers whether advanced economies have reached a tipping point where high levels of debt push inflation higher and suppress economic growth, or whether higher deficits may not spell economic disaster after all. It also contemplates what impact higher deficits and higher borrowing costs could have on investor portfolios.

Read more here:

<https://meketa.com/leadership/can-governments-really-pay-for-everything-they-promise/>

MEKETA ESSENTIALS

Meketa Essentials provides an advanced asset allocation and risk management toolset designed to empower chief investment officers, investment staff, and trustees to make data-driven decisions with confidence.

What is the probability of achieving our target returns?

The asset allocation tool within Meketa Essentials uses sophisticated modeling to estimate the likelihood of reaching your target returns over multiple time periods. By providing insights through probability distributions, it enables decision-makers to gauge if their current strategy is aligned with long-term financial goals.

How might our portfolio respond to economic and market shifts?

With capabilities like stress testing and economic regime modeling, Meketa Essentials allows clients to simulate the effects of different growth, inflation, and interest rate scenarios on their portfolios. This helps in understanding potential vulnerabilities and preparing for various market conditions.

Are we effectively managing portfolio risk?

The platform's risk decomposition tool breaks down overall portfolio risk by asset class, helping stakeholders pinpoint which areas contribute most to volatility. Additionally, tools like tracking error analysis provide insights into deviations from benchmarks, enabling a clearer view of whether risks are within acceptable limits.

MEKETA Essentials Asset Allocation - Probability of Achieving Target Return of: at least 7%

Years	Current Portfolio	Aggressive	Liquid
1	53.87 %	55.63 %	50.90 %
3	56.69 %	59.69 %	51.56 %
5	58.60 %	62.43 %	52.02 %
10	62.07 %	67.29 %	52.85 %
20	66.81 %	73.67 %	54.03 %

MEKETA Essentials Asset Allocation - Risk Decomposition

Asset Group	Current Portfolio Absolute	Aggressive Absolute	Liquid Absolute	Current Portfolio Percentage	Aggressive Percentage	Liquid Percentage
> Risk Mitigating Assets	0.12 %	-0.01 %	0.24 %	1.00 %	-0.07 %	2.20 %
> Inflation Hedges	0.93 %	0.66 %	0.37 %	7.45 %	4.25 %	3.47 %
> Growth Assets	11.40 %	14.98 %	10.12 %	91.55 %	95.82 %	94.33 %

MEKETA Essentials Asset Allocation - Stress Scenarios (Negative) - Negative

Scenario	Current Portfolio	Aggressive	Liquid
10-year Treasury Bond rates rise 100 bps	3.97 %	5.44 %	3.58 %
10-year Treasury Bond rates rise 200 bps	-1.09 %	0.27 %	-2.33 %
10-year Treasury Bond rates rise 300 bps	-2.19 %	-1.26 %	-2.83 %
Baa Spreads widen by 50 bps, High Yield by 200 bps	1.05 %	0.56 %	0.63 %
Baa Spreads widen by 300 bps, High Yield by 1000 bps	-19.51 %	-21.66 %	-20.20 %
Trade Weighted Dollar gains 10%	-2.85 %	-2.95 %	-4.52 %
Trade Weighted Dollar gains 20%	-0.81 %	-0.84 %	-0.05 %
U.S. Equities decline 10%	-5.29 %	-6.74 %	-5.01 %
U.S. Equities decline 25%	-15.42 %	-18.00 %	-14.38 %
U.S. Equities decline 40%	-23.32 %	-25.81 %	-24.37 %

MEKETA'S WEEK OF SERVICE

Each year, Meketa dedicates a week to giving back to our communities. This year, we focused on homelessness, partnering with Blanchet House, Sarah's Circle, and United Way to volunteer our time and resources.

Blanchet House: Established in 1952 by University of Portland alumni, Blanchet House provides meals, clothing, hygiene items, and transitional recovery programs to those in need in Old Town and on its farm.. (Portland, OR)

Sarah's Circle: Founded in 1979, Sarah's Circle offers a safe space and essential services, such as shelter, meals, and community support, to women experiencing homelessness in the Uptown neighborhood. (Chicago, IL)

United Way: United Way connects communities worldwide to close gaps, open opportunities, and ensure that everyone can thrive. (Carlsbad, CA)



MEKETA IN THE NEWS

The Institutional Appetite for Private Equity and Deal Activity | [August 13, 2023](#)

Tim Toska, Global Head of Private Equity at Alter Domus, John Haggerty, Managing Principal & Director of Private Market Investments at Meketa Investment Group, Bart Molloy, Partner at Monument Group, join Jill Malandrino on Nasdaq TradeTalks to discuss the institutional appetite for private equity and deal activity.

[Watch Full Video Here](#)



Pensions&Investments

Pensions & Investments' 60 Influential Women in Institutional Investing 2024 Judy Chambers, managing principal, private markets consultant, Meketa

By [Arleen Jacobius](#) | [September 9, 2024](#)



[Read Full Article Here](#)

Judy Chambers' finance career began early, working in a bank during the summer from age 15. She continued working at banks while earning her bachelor's degree and an MBA, the latter from [Northwestern University's Kellogg School of Management](#).

Chambers left banking and a job in Lehman Brothers' finance department for private equity consulting in 2002, after meeting Allan Emkin, a managing principal and founder of consulting firm [Pension Consulting Alliance](#). Meketa merged with PCA in 2019.

Chambers is now a managing principal and private markets consultant at Meketa. Fostering women's growth starts with "one, recruiting them and then keeping them" by sponsoring them, ensuring they get the proper exposure in front of the rest of the team, she said.

Female executives who are just starting out need time to get on the right path, she said. "Everyone is smart," but they may not know what to do because they hadn't done it before, she said.

Mentors have been key in her own career, with sponsorship being key, Chambers said. Sponsorship means that there is always someone at the table that is fighting for you even if you're not in the room, Chambers said. "What keeps you at a firm is sponsorship," she added.

The industry has become more inclusive, better reflecting society than 20 or so years ago, Chambers said. "But it's still not 50-50," she said. "I go to a lot of meetings where I'm the only woman that has come through the room all day long. That shouldn't be at this point in 2024."

Disclaimer, Glossary, and Notes

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security).

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return) and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus, it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk-free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

Sources: Investment Terminology, International Foundation of Employee Benefit Plans, 1999.
The Handbook of Fixed Income Securities, Fabozzi, Frank J., 1991

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.